ESTIMATING AND COSTING

ENCE 351

Lecture : 3 **Year : III**
Tutorial : 1 **Part : II**
Practical : 0

Course Objectives:

The objective of this course is to provide basic methods of measurement, techniques for taking out quantities, and their respective units of measurement. Students will become familiar with detailed estimates of various civil engineering structures, including buildings, roads, bridges, irrigation, sanitary and water supply systems by extracting quantities from detail drawings along with the analysis of rate of respective works based on various departmental norms. Additionally, the course covers method of approximate estimates, property valuation, and the preparation of detailed estimate and valuation reports.

1 Introduction (3 hours)

1.1 Definition, importance and purpose of estimation
1.2 Units of measurement and payment
1.3 Data required for estimation of civil engineering works
1.4 Method of measurement of earthwork, plaster work, brick work, concrete work, reinforcement and wood work

2 Methods of Quantity Estimate (4 hours)

2.1 Long wall short wall method
2.2 Center line method
2.3 Crossing method
2.4 Bay method

3 Types of Estimate (4 hours)

3.1 Approximate estimate, purpose and methods
3.2 Detailed estimate
3.3 Revised estimate
3.4 Supplementary estimate
3.5 Complete estimate
3.6 Splitting of cost of building, road, water supply and sanitary works into sub-heads
3.7 Detail estimation formats (Summary of cost, detail quantity estimate, analysis of rate, abstract of cost and bill of quantities)

4 Detail Quantity Estimate of Building Works (10 hours)

4.1 Two room load bearing single-storey building with verandah
4.2 Four room frame structured building with reinforcement calculations
4.3 Septic tank with soak pit
4.4 Underground water tank

5 Detail Quantity Estimate for Road, Bridge and Irrigation Works (8 hours)

5.1 Pipe culverts, slab culverts and box culverts
5.2 T-Beam bridge (Superstructure, abutment and pier)
5.3 Well foundation
5.4 Earthwork in road construction in plain and hilly areas
5.5 Estimation of pavement work and retaining works in roads
5.6 Earthwork and lining works in irrigation canals

6 Analysis of Rates (6 hours)

6.1 Importance and purpose of rate analysis
6.2 Data required for rate analysis
6.3 Factor affecting rate analysis
6.4 Prevailing rate analysis norms and district rates in Nepal
6.5 Analysis of rate
  6.5.1 Building works: Brickwork, concrete work, reinforcement work, woodwork, plaster work and flooring work
  6.5.2 Road works: Earthwork in excavation/ filling using equipment; Gabion, stone masonry, plum concrete and pavement works
  6.5.3 Sanitary and water supply works: Wash basin; commode and pan; pipes and fittings

7 Valuation (4 hours)

7.1 Purpose, importance and principle of valuation
7.2 Concept of cost and value
7.3 Factors affecting the value of the property
7.4 Methods of valuation of properties
7.5 Valuation report and its components

8 Specification (6 hours)

8.1 Purpose of specifications
8.2 Types of specifications
8.3 Importance of specifications
8.4 Methods of writing specifications
8.5 Detail specifications (Site works; Structural works; Finishing works)

Tutorial **(15 hours)**

1. A two-storied residential building (Load-bearing and RCC frame structures)
2. Earthwork in the canal and lining
3. T-beam bridge with pier, abutment and well foundation
4. Calculation of earthworks for roads in plain and hilly area
5. Analysis of rates of different item of works (Building, road, sanitary, irrigation)
6. Preparation and submission of valuation report for land and buildings

Final Exam

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as indicated in the table below:

Chapter	Hours	Marks distribution*
1	3	4
2	4	6
3	4	6
4	10	12
5	8	10
6	6	8
7	4	6
8	6	8
Total	**45**	**60**

* There may be minor deviation in marks distribution.

References

1. Chakraborti, M. (2006). Estimating, costing, specification and valuation in civil engineering (29th rev. and enlarged ed.). M. Chakraborti.
2. Dutta, B. N., Dutta, S. (1998). Estimating and costing in civil engineering: Theory and practice including specifications and valuation (24th ed.). UBS Publishers' Distributors.
3. Birdie, G. S. (2014). A text book of estimating and costing for civil engineering (New ed.). Dhanpat Rai Publishing Company Pvt. Ltd.
4. Government of Nepal. Prevailing building codes and by-laws in Nepal.