

ESTIMATION AND SPECIFICATION

ENCE 359

Lecture : 3
Tutorial : 1
Practical : 0

Year : III
Part : II

Course Objectives:

The objective of this course is to develop knowledge and skills needed to work out quantities of items of work, rate analysis, cost estimation and quality check of building projects. It enables the preparation of detailed estimates from working drawings and the formulation of clear and accurate technical specifications for construction works.

- 1 Introduction (2 hours)**
 - 1.1 Definition, importance and purpose of estimation
 - 1.2 Units of measurement and payment
 - 1.3 Data required for the estimation
 - 1.4 Method of measurement

- 2 Method of Taking Out Quantities (4 hours)**
 - 2.1 Long wall short wall method
 - 2.2 Center line method
 - 2.3 Crossing method
 - 2.4 Bay method

- 3 Type of Estimates (5 hours)**
 - 3.1 Approximate estimates, purpose and methods
 - 3.2 Detailed estimate
 - 3.3 Revised estimate
 - 3.4 Supplementary estimate
 - 3.5 Complete estimate
 - 3.6 Splitting of the cost of building and its components
 - 3.7 Reporting essentials (Government and others)

- 4 Detailed Quantity Estimate of Building Projects (15 hours)**
 - 4.1 Civil works
 - 4.2 Electrical works (Internal and external)
 - 4.3 Sanitary works (Internal and external)
 - 4.4 HVAC
 - 4.5 Site development work
 - 4.6 Interior works

5 Analysis of Rates

(5 hours)

- 5.1 Importance and purpose of rate analysis
- 5.2 Data required for rate analysis
- 5.3 Factors affecting rate analysis
- 5.4 Prevailing rate analysis norms and district rates in Nepal
- 5.5 Analysis of the rate
 - 5.5.1 Building works (Brickwork, concrete work, reinforcement work, wood works, plaster works, flooring works)
 - 5.5.2 Road works (Earthwork in excavation/ filling using equipment, gabion works, stone masonry work and plum concrete work)
 - 5.5.3 Sanitary works and water supply works (Wash basin, commode and pan, pipes and fittings)

6 Specification

(14 hours)

- 6.1 Purpose of specifications
- 6.2 Types of specifications
- 6.3 Importance of specifications
- 6.4 Methods of writing specifications
- 6.5 Detailed specifications (Site works, structural works, plumbing and sanitary works, electrical works, flooring and finishing works)

Tutorial

(15 hours)

- 1. A two-storied residential building with verandah (Load-bearing and RCC frame structures)
- 2. A four-room frame-structured building, including reinforcement calculations
- 3. Calculation of earthworks for roads of building projects in plain and hilly areas
- 4. Analysis of rates of different items of work (Civil, electrical, sanitary, HVAC, interior, site development)
- 5. Application of software in quantity and cost estimation
- 6. Writing detail specification of any appropriate item of works

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	Mark distribution*
1	2	3
2	4	5
3	5	8
4	15	20
5	5	8
6	14	16
Total	45	60

* There may be minor deviation in marks distribution.

References

1. Chakraborti, M. (2021). Estimating, costing, specification, and valuation in civil engineering. Chakraborti.
2. Dutta, B. N. (2022). Estimating and costing in civil engineering: Theory and practice. UBS Publishers' Distributors Pvt. Ltd.
3. Birdie, G. S. (1982). Textbook of estimating and costing in civil engineering (Latest Edition). Dhanpat Rai.
4. Upadhyay, A. K. (2010). Civil estimating & costing. S. K. Kataria & Sons.