

BCE-602	Engineering Economics, Estimation & Costing	2L:1T:0P	3 credits
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Pre-requisites: Economics

Course Objectives:

CO1	To learn about introduction to economics
CO2	To learn about economics of sampling and Replacement and Maintenance
CO3	To learn about depreciation and Evaluation of public alternatives
CO4	To learn about design analysis
CO5	To learn about value engineering.

Module 1:

Basic Principles and Methodology of Economics. Demand/Supply – elasticity – Government Policies and Application.. Basic Macro-economic Concepts (including GDP/GNP/NI/Disposable Income) and Identities for both closed and open economies. Aggregate demand and Supply (IS/LM)., Interest rates, Direct and Indirect Taxes .
Elements of Business/Managerial Economics and forms of organizations. Cost & Cost Control –Techniques, Types of Costs, Lifecycle costs, Budgets, Break even Analysis, Capital Budgeting, , Depreciation, Time value of money (present and future worth of cash flows). Business Forecasting – Elementary techniques. Statements – Cash flow, Financial. Case Study Method.

Module 2:

Estimation / Measurements for various items- Introduction to the process of Estimation; Use of relevant Indian Standard Specifications for the same, taking out quantities from the given requirements of the work, comparison of different alternatives, Bar bending schedules, Mass haul Diagrams, Estimating Earthwork and Foundations, Estimating Concrete and Masonry, Finishes, Interiors, BIM and quantity take-offs; adding equipment costs; labour costs; rate analysis, market survey of basic materials.
Specifications-Types, requirements and importance, detailed specifications for buildings, roads, minor bridges and industrial structures.
Rate analysis-Purpose, importance and necessity of the same, daily output from different equipment/ productivity.

Module 3:

Tender- Preparation of tender documents, importance of inviting tenders, contract types, relative merits, pre qualification. General and special conditions, termination of contracts,extraworkandChanges,penaltyandliquidatedcharges,Settlementofdisputes,R.A. Bill & Final Bill, Payment of advance, insurance, claims, price variation, etc. Preparing Bids- Bid Price buildup: Material, Labour, Equipment costs, Risks, Direct & Indirect Overheads,

Profits; Bid conditions, alternative specifications; Alternative Bids.

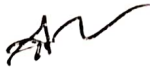
Introduction to Acts pertaining to-Minimum wages, Workman's compensation, Contracts, Arbitration, Easement rights.

Course Outcomes: After the completion of the course the student will be able to:

CO1	The ability to understand professional and ethical responsibility and apply them in engineering practices.
CO2	The ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
CO3	Utilize contracts and tenders in construction practices
CO4	Analyze, & assess the quantity of materials required for civil engineering works as per specifications.
CO5	Evaluate & estimate the cost of expenditure and prepare a detailed rate analysis report.
CO6	Construct detailed report on estimation and valuation process.

Text/Reference Books:

1. Mankiw Gregory N. (2002), *Principles of Economics*, Thompson Asia
2. V. Mote, S. Paul, G. Gupta(2004), *Managerial Economics*, Tata McGraw Hill
3. Misra, S.K. and Puri (2009), *Indian Economy*, Himalaya
4. Pareek Saroj (2003), *Textbook of Business Economics*, Sunrise Publishers
5. M Chakravarty, *Estimating, Costing Specifications & Valuation*
6. Joy P K, *Handbook of Construction Management*, Macmillan
7. B.S. Patil, *Building & Engineering Contracts*
8. Relevant Indian Standard Specifications.
9. World Bank Approved Contract Documents.
10. FIDIC Contract Conditions.
11. Acts Related to Minimum Wages, Workmen's Compensation, Contract, and Arbitration
12. Typical PWD Rate Analysis documents.
13. UBS Publishers & Distributors, *Estimating and Costing in Civil Engineering: Theory and Practice including Specification and Valuations*, 2016
14. Dutta, B.N., *Estimating and Costing in Civil Engineering (Theory & Practice)*, UBS Publishers, 2016


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