

Construction Economics & Finance - Web course

COURSE OUTLINE

For any construction project to be successful, it must be technically sound and the resulting benefits must exceed the cost associated with the project. This course "Construction Economics and Finance" basically aims at describing various aspects of engineering economics. The field of construction economics and finance deals with the systematic evaluation of cost and benefit associated with different projects. The topics in this course cover principles of engineering economy followed by basic methods for carrying out economic studies considering the time value of money. The other topics include the demonstration of different methods namely present, future and annual worth method, rate of return, break-even comparison, capitalized-cost and cost-benefit analysis for the comparison of alternatives. In addition, other topics those will be covered are different methods of depreciation, taxes, and cost analysis of construction equipments followed by cost estimating. Further, topics on financial management namely construction accounting, financial statements, financial ratios and working capital management are also included in this course. The topics will be developed in a logical sequence. For clear illustration of concepts, a number of problems will be solved. This course will definitely help the students and teachers in understanding the underlying principles and concepts in construction economics and finance.

Contents: Basic principles of Engineering economy, Time value of money, Comparison of alternatives by different methods, Different method of depreciation, Taxes, Inflation, Equipment economics, Equipment costs, Replacement analysis of equipments, Cost estimating, Financial management, Construction accounting.

COURSE DETAIL

Sl. No	Topic	No. of Hours
1	Engineering economics : Basic principles – Time value of money, Quantifying alternatives for decision making, Cash flow diagrams, Equivalence- Single payment in the future (P/F, F/P), Present payment compared to uniform series payments (P/A, A/P), Future payment compared to uniform series payments (F/A, A/F), Arithmetic gradient, Geometric gradient.	08
2	Comparison of alternatives: Present, future and annual worth method of comparing alternatives, Rate of return, Incremental rate of return, Break-even comparisons, Capitalized cost analysis, Benefit-cost analysis.	16
3	Depreciation, Inflation and Taxes: Depreciation, Inflation, Taxes.	05
4	Equipment economics: Equipment costs, Ownership and operating costs, Buy/Rent/Lease options, Replacement analysis.	05
5	Cost estimating: Types of Estimates, Approximate estimates – Unit estimate, Factor estimate, Cost indexes, Parametric estimate, Life cycle cost.	04



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Civil Engineering

Additional Reading:

1. Literature on Construction Economics and Finance.

Coordinators:

Dr. Bulu Pradhan
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6	Financial management: Construction accounting, Chart of Accounts, Financial statements – Profit and loss, Balance sheets, Financial ratios, Working capital management.	05
	Total	43

References:

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3. Boyer, C. B. and Merzbach, U. C., "A History of Mathematics", 2nd ed., John Wiley & Sons, New York, 1989.
4. Gould, F. E., "Managing the Construction Process", 2nd ed., Prentice Hall, Upper Saddle River, New Jersey, 2002.
5. Gransberg, D. G., Popescu, C. M. and Ryan, R. C., "Construction Equipment Management for Engineers, Estimators, and Owners, CRC/Taylor & Francis, Boca Raton, 2006.
6. Harris, F., McCaffer, R. and Edum-Fotwe, F., "Modern Construction Management", 6th ed., Blackwell Publishing, 2006.
7. Jha, K. N., "Construction Project Management, Theory and Practice", Pearson, New Delhi, 2011.
8. Newnan, D. G., Eschenbach, T. G. and Lavelle, J. P., "Engineering Economic Analysis", Indian Edition, Oxford University Press, 2010.
9. Ostwald, P. F., "Construction Cost Analysis and Estimating", Prentice Hall, Upper Saddle River, New Jersey, 2001.
10. Peterson, S. J., "Construction Accounting and Financial Management", Pearson Education, Upper Saddle River, New Jersey, 2005.
11. Peurifoy, R. L., Schexnayder, C. J. and Shapira, A., "Construction Planning, Equipment, and Methods, 7th ed., Tata McGraw-Hill, New Delhi, 2010.
12. Peurifoy, R. L. and Oberlender, G. D., "Estimating Construction Costs", 5th ed., McGraw-Hill, New Delhi, 2004.
13. Schexnayder, C. J. and Mayo, R. E., "Construction Management Fundamentals", International Edition, McGraw-Hill, 2003.
14. Sullivan, W. G., Bontadelli, J. A. and Wicks, E. M., "Engineering Economy", 11th ed., Prentice Hall, Upper Saddle River, New Jersey, 2001.