



# GUJARAT TECHNOLOGICAL UNIVERSITY

## CIVIL (Construction Engineering & Management)

Master of Engineering

Subject Code: 3731408

Semester – III

Subject Name: Project Economics and Financial Management

Type of Course: Elective

Prerequisite: NIL

### Rationale:

This course bring about an exposure to construction economics, financing and accounting methods and their usefulness in controlling construction projects.

### Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	0	0	70	30	0	0	100	

### Course Contents

Sr.No.	Topics	Hrs.
1	<b>Engineering Economics :</b> 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.	07
2	<b>Comparison of Alternatives:</b> 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.	14
3	Depreciation, Inflation and Taxes: Depreciation, Inflation, Taxes.	05
4	<b>Equipment Economics:</b> Equipment costs, Ownership and operating costs, Buy/Rent/Lease options, Replacement analysis.	05
5	<b>Cost Estimating:</b> Types of Estimates, Approximate estimates – Unit estimate, Factor estimate, Cost indexes, Parametric estimate, Life cycle cost.	04
6	<b>Financial Management:</b> Construction accounting, Chart of Accounts, Financial statements – Profit and loss, Balance sheets, Financial ratios, Working capital management.	05
	<b>Total</b>	<b>42</b>



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### Reference Book(s)

- Blank, L. T. and Tarquin, A. J., “Engineering Economy”, Fourth Edition, WCB/McGraw-Hill, 1998.
- Bose, D. C., “Fundamentals of Financial management”, 2nd ed., PHI, New Delhi, 2010.
- Boyer, C. B. and Merzbach, U. C., “A History of Mathematics”, 2nd ed., John Wiley & Sons, New York, 1989.
- Gould, F. E., “Managing the Construction Process”, 2nd ed., Prentice Hall, Upper Saddle River, New Jersey, 2002.
- Gransberg, D. G., Popescu, C. M. and Ryan, R. C., “Construction Equipment Management for Engineers, Estimators, and Owners, CRC/Taylor & Francis, Boca Raton, 2006.
- Harris, F. , McCaffer, R. and Edum-Fotwe, F., “Modern Construction Management”, 6th ed., Blackwell Publishing, 2006.
- Jha, K. N., “Construction Project Management, Theory and Practice”, Pearson, New Delhi, 2011.
- Newnan, D. G., Eschenbach, T. G. and Lavelle, J. P., “Engineering Economic Analysis”, Indian Edition, Oxford University Press, 2010.

### Course Outcome

Sr. No.	CO statement	Marks % weightage
CO-1	Prepare income, profit and loss statements and implement construction accounting	20%
CO-2	Evaluate construction project economics, cost-benefit analysis and breakeven analysis.	30%
CO-3	Analyze and evaluate construction risks and uncertainties.	20%
CO-4	Understand the impact of inflation, taxation, depreciation, Financial planning, working capital management, budgeting and control, economic basis for replacement.	30%

### **Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>					
R Level	U Level	A Level	N Level	E Level	C Level
<b>10</b>	<b>25</b>	<b>20</b>	<b>20</b>	<b>15</b>	<b>10</b>

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

List of Open Source Software/learning website: [www.nptel.ac.in/courses/](http://www.nptel.ac.in/courses/)