Category IV

BSc. Physical Sciences/ Mathematical Sciences with Operational Research as one of the three Core Disciplines

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE – 6 Project Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Project Management (DSC-6)	4	3	0	1	Class XII with Maths	Nil

Learning Objectives

The objective of this course is to acquaint students with the fundamental concepts of project planning and management.

Learning outcomes

After completion of the course, students will possess knowledge and skills required to

- Formulate, evaluate, monitor and control a project.
- Gain an understanding of tools and techniques for project management.
- Use network analysis techniques to solve problems related to project management.
- Manage projects with deterministic and probabilistic activity times.
- Carry out time-cost trade-off analysis in a project.
- Understand the utility of some real-life applications of project management problems.

SYLLABUS OF DSC-6

Unit I: Introduction **(6 hours)**

Meaning of a project, project classification, Lifecycle and phases of a project, Concept of project management, Objectives and significance of project management, Roles and responsibilities of a project manager, Tools and techniques of project management.

Unit II: Project Appraisal **(12 hours)**

Market feasibility analysis: Market and demand analysis, collection of primary and secondary information, demand forecasting. Technical feasibility analysis: Material input and manufacturing process, selection of locations, Technology selection. Financial feasibility

analysis: Project cost estimation and working capital requirements, sources of financing, financial risk analysis using payback period and net present value techniques.

Unit III: Project Scheduling and Network analysis (12 hours)
Steps involved in project scheduling, Meaning and application of a network diagram, Construction of a network diagram for a project, time estimates in network analysis, float and slack analysis, critical path analysis, Introduction to Critical path method (CPM) and Program Evaluation and Review Technique (PERT) for project management.

Unit IV: Project Time Crashing (9 hours)
Project time crashing (time-cost trade off analysis): meaning and significance for project management, direct and indirect costs, finding optimal completion time of project by doing time-cost trade off analysis.

Unit V: Project Monitoring, Control and termination (6 hours)
Data collection and reporting for project evaluation, Social cost-benefit analysis and Abandonment analysis. Project Termination: types of terminations, project termination process.

Practical component (if any) [30 Hours] -
Practical/Lab to be performed on a computer using OR/Statistical packages

- Construction of a network.
- Construct the network of a project with deterministic activity times.
- Finding different types of floats involved in a project network.
- Conduct time-cost trade off analysis in the context of a project network.
- Construct the network of a project with probabilistic activity times.
- Finding expected completion time and variance of completion time in PERT.
- Finding probability of completing the project within scheduled time in PERT.

Essential/recommended readings

- Bazaraa, M. S., Jarvis, J. J., & Sherali, H. D. (2011). Linear programming and network flows. John Wiley & Sons.
- Bertsekas, D. (1998). Network optimization: continuous and discrete models (Vol. 8). Athena Scientific.
- Elmaghraby, S. E. (1977). Activity networks: project planning and control by network models. John Wiley & Sons.
- Kerzner, H. (2017). *Project management: a systems approach to planning, scheduling, and controlling*. John Wiley & Sons.
- Larson, E. W., & Gray, C. F. (2021). Project management: The managerial process. 8th edition. McGraw-Hill Education.
- Levy, F. K., & Wiest, J. D. (2016). Management guide to PERT/CPM; with GERT/PDM/DCPM and other networks. Prentice-Hall of India.

Suggestive readings: Nil

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.