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Project Management — Complete Syllabus

BTEUP Diploma in Mechanical Engineering (Production) • 6th Semester • Session 2026–27

Subject 6.3.3 (Theory) • Elective Pathway • Total 100 Marks • 3 Credits

About this document: Project Management is subject 6.3.3 of the 6th semester of the Diploma in Mechanical Engineering (Production). It is one of the five Elective Pathway options — a student picks any ONE of the five: Advanced Engineering Mathematics (6.3.1), Additive Manufacturing (6.3.2), Project Management (6.3.3), Finance Fundamentals (6.3.4) and Industry 4.0 (6.3.5). This document gives the complete unit-wise syllabus, the examination scheme and the reference books from the official curriculum.

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Examination Scheme

Code	Paper	Type	L – P	Credits	Internal	External	Total
6.3.3	Project Management	Theory	3 – 0	3	Theory 40	Theory 60 (3 hrs)	100
Project Management Total				**3**	**40**	**60**	**100**

What This Subject Aims To Do

To teach students how projects are planned, evaluated, scheduled and led — feasibility studies, cost-benefit appraisal, PERT and CPM networks, and team management — so that a project finishes on scope, on time and on budget.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks

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1	Project Management: An Overview	8	12
2	Project Feasibility Studies and Project Life Cycle	8	12
3	Project Evaluation and Cost Benefit Analysis	8	12
4	Project Network: PERT and CPM, Appraisal and Control	8	12
5	Leading Projects and Managing Project Teams	10	12

Total: 42 periods, 60 marks (external theory). Each of the five units carries 12 marks in the external theory paper, as per the suggested distribution of marks in the official syllabus.

Unit 1 — Project Management: An Overview (8 Periods, 12 Marks)

Topics: Project: classification, importance of project management, an integrated approach, project portfolio management system, the need, choosing the appropriate project management structure: organizational considerations and project considerations, steps in defining the project, project rollup, process breakdown structure, responsibility matrices, external causes of delay and internal constraints.

In simple words: What a project is, how projects are organised and chosen, and why projects run late.

Unit 2 — Project Feasibility Studies and Project Life Cycle (8 Periods, 12 Marks)

Topics: Project feasibility studies: opportunity studies, general opportunity studies, specific opportunity studies, pre-feasibility studies, operational studies or support studies, feasibility study, components of project feasibility studies, managing project resources flow, project planning to project completion: pre-investment phase, investment phase and operational phase, project life cycle, project constraints.

In simple words: How a project's feasibility is studied — opportunity, pre-feasibility and full feasibility — and the phases of a project life cycle.

Unit 3 — Project Evaluation and Cost Benefit Analysis (8 Periods, 12 Marks)

Topics: Project evaluation under certainty: net present value (problems, case study), benefit cost ratio, internal rate of return, urgency, payback period, ARR. Project evaluation under uncertainty, methodology for project evaluation, commercial vs national profitability, social cost benefit analysis, commercial or national profitability, social or national profitability.

In simple words: How a project is judged in money terms: NPV, benefit-cost ratio, IRR, payback and ARR, and how uncertainty and social costs change the answer.

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Unit 4 — Project Network: PERT and CPM, Appraisal and Control (8 Periods, 12 Marks)

Topics: Developing a project plan, developing the project network, constructing a project network (problems), PERT, CPM, crashing of project network (problems, case study), resource leveling and resource allocation, how to avoid cost and time overruns, steps in project appraisal process, project control process, control issues, project audits, the project audit process, project closure, team, team member and project manager evaluations.

In simple words: How project networks are drawn and analysed with PERT and CPM, how a project is crashed, and how appraisal, control and audit keep it on track.

Unit 5 — Leading Projects and Managing Project Teams (10 Periods, 12 Marks)

Topics: Managing versus leading a project, managing project stakeholders, social network building (including management by wandering around), qualities of an effective project manager, managing project teams, five stage team development model, situational factors affecting team development, project team pitfalls.

In simple words: The difference between managing and leading a project, what makes a good project manager, and how teams grow — and where they go wrong.

Learning Outcomes

- Familiarise with fundamentals of project management, project structures, portfolio management, and causes of project delays.
- Analyze project feasibility studies, project life cycle phases, and project constraints.
- Evaluate projects under certainty and uncertainty using financial, commercial, and social cost-benefit analysis techniques.
- Develop and analyze project networks using PERT and CPM techniques and apply project appraisal and control mechanisms.
- Apply project leadership and team management principles to effectively manage stakeholders and project teams.

Reference Books (as listed in the syllabus)

- Clifford F. Gray and Erik W. Larson, Project Management — The Managerial Process, Tata McGraw-Hill.
- Dragan Z. Milosevic, Project Management Toolbox: Tools and Techniques for the Practicing Project Manager.

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- P. Gopalakrishnan and V. E. Ramamoorthy, Textbook of Project Management, Macmillan India Ltd.
- Harold Kerzner, Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Eighth Edition, John Wiley & Sons.
- Jason Charvat, Project Management Methodologies: Selecting, Implementing, and Supporting Methodologies and Processes for Projects, John Wiley & Sons.
- Kevin Forsberg, Hal Mooz and Howard Cotterman, Visualizing Project Management: A Model for Business and Technical Success, Second Edition, John Wiley & Sons.
- Web: https://youtu.be/pc9nvBsXsuM
- NPTEL: https://youtu.be/PqQqTAu_FiM

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Source: IRDT Kanpur NEP-2020 curriculum for the Diploma in Mechanical Engineering (Production), updated and approved by the Board of Technical Education, U.P., Lucknow, in the C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-language summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.

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