



HINDUSTAN

INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)
CHENNAI

DEPARTMENT OF CIVIL ENGINEERING

HONORS OFFERED UNDER B.TECH. CIVIL ENGINEERING

HONORS: CONSTRUCTION PROJECT MANAGEMENT AND COST ESTIMATION

S.No	Course Code	Name of the Course	Total Learning Hours	Credit
1	CEH4361	Construction Planning & Cost Estimation	45	3
2	CEH4376	Project Management & Scheduling	45	3
3	CEH4377	Infrastructure Project Management	45	3
4	CEH4462	Project management for managers	45	3
Total Credits				12

CURRICULUM

B. TECH HONORS IN CONSTRUCTION PROJECT MANAGEMENT AND COST ESTIMATION									
SEM	COURSE CATEGORY	COURSE CODE	NAME OF THE COURSE	L	T	P	C	S	TCH
V	Honors	CEH4361	Construction Planning and Cost Estimation	3	0	0	3	0	3
VI	Honors	CEH4376	Project Management and Scheduling	3	0	0	3	0	3
VI	Honors	CEH4377	Infrastructure Project Management	3	0	0	3	0	3
VII	Honors	CEH4462	Project Management for Managers	3	0	0	3	0	3
TOTAL				12	0	0	12	0	12

L-Lecture T-Tutorial P-Practical C-Credit S-Self-study TCH-Total contact hours

HONORS

COURSE TITLE	CONSTRUCTION PLANNING & COST ESTIMATION			CREDITS	3
COURSE CODE	CEH4361	COURSE CATEGORY	HONORS	L-T-P-S	3-0-0-0
Version	1.0	Approval Details	33 ACM, 05.02.2022	LEARNING LEVEL	BTL-3
ASSESSMENT SCHEME					
First Periodical Assessment	Second Periodical Assessment	Seminar/ Assignments/ Project	Surprise Test / Quiz	Attendance	ESE
15%	15%	10%	5%	5%	50%
Map with multiple courses for 45 Hours per course. End Semester Examination should be conducted per course.					
Course Description	The Construction Management professionals in the construction and civil engineering industry looking to advance their careers. Through this specialization, students will gain comprehensive industry knowledge along with the latest trends and development within the industry. This course specialization will cover the major facets of construction management including project initiation and planning, cost estimating and control, and construction project financials. After students complete this specialization, they will have gained significant skills and tools to stay relevant and ahead of the curve in the world of construction management.				
Course Objective	<p>The course should enable the students to</p> <ol style="list-style-type: none"> 1. Know the Construction project planning. 2. Gain knowledge about quantity measurement and cost estimation of a construction project. 3. Know about the importance of cost controlling and how to monitor project cash flow in a construction project 4. Know about the financial plans to be considered in a construction project 5. Learn about public private partnership and Engineering procurement construction Contracts. 				
Course Outcome	<p>Upon completion of this course, the students will be able to</p> <ol style="list-style-type: none"> 1. Perform a project planning assessment based on the business requirements. 2. Estimate the quantity of materials required for a construction project and execute cost estimation. 3. Apply cost control measures in a construction project. 4. Develop financial plans for a construction project. 5. Analyse the public private partnership projects. 				
Prerequisites: Nil					
CO, PO AND PSO MAPPING					

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	2	-	2	2	-	3	3	-	1	3
CO2	2	1	-	2	1	2	1	2	-	-	3	3	3	2	3
CO3	2	1	-	2	1	2	1	2	-	-	3	3	3	2	3
CO4	2	1	-	2	1	2	1	2	-	-	3	3	3	2	3
CO5	2	1	-	2	1	2	1	2	-	-	3	3	3	2	3
1: Weakly related, 2: Moderately related and 3: Strongly related															
MODULE 1: INITIATING AND PLANNING PROJECTS (9)															
Project Management Project Planning - Stakeholders- Scope Matters- consultant selection, site investigation & selection, land acquisition, preliminary cost estimate, basic concepts in the development of construction plans – Cost and Benefit of Planning – Types of Plan – Planning for Construction – The Planning Process in the project Cycle – The Context of Construction Project Planning													CO-1 BTL-2		
MODULE 2 CONSTRUCTION COST ESTIMATING (9)															
Quantity Estimate - Construction Cost Estimating and Cost Control Types of Cost Estimates. Quantity Take-Off and Measurement - Measurement, Masonry, Glass Curtain Wall, Facade , Wall Finishes , Introduction to Deep Foundations, Concrete Foundation, Concrete Formwork, Pricing - Cost of Materials , Reinforcing Steel and Concrete - Productivity Component ,Building Estimate. Cost Estimation in Practice - Cost Estimating in General Practice -Roles and Responsibilities of Cost Managers.													CO-2 BTL-3		
MODULE 3: PROCUREMENT, PROJECT CASH FLOW & COST CONTROL (9)															
Procurement -General Procurement: Pre-Bid Estimate and Bid Documentation - Bid Stage, Bid Returns and Leveling - Earned Value Method (EVM) - Defining EVM- EVM Parameters -Performance Examples –Project Cash Flow - Cash Flow Method -Accrual Method -Contractor Cash Flow- Charting Cash Flow -Calculating Billing - Payment Cycle - Technology Trends in Cost Estimating and Cost Control -5D Estimating Systems (BIM) - Cost of a Capital Program -Useful Tools for Cost Control- Lean in Cost Control - Money and Estimate in Capital Project Delivery.													CO-3 BTL-3		
MODULE 4 : CONSTRUCTION FINANCE (9)															
Introduction-Construction Finance – Time value of Money - Project Evaluation - Computing Interest , Simple Interest, Present and Future Value of Money -Net Present Value (NPV) -Internal Rate of Return (IRR) Real Estate Finance for Development Projects -Introduction to Financing Development Projects - Feasibility Study Financial Plans for Development Projects -													CO-4 BTL-3		
MODULE 5: PUBLIC - PRIVATE PARTNERSHIPS (9)															
Public - Private Partnerships -Public Private Partnerships (P3) Concept and Key Elements -Project Types -Drivers, Value and Typical Structures of P3- Responsibilities and Risk Transfer in various P3 structures -Pursuits through full project lifecycle and P3 Success Factors -Benefits of P3 Getting on Board with P3. Types of project – EPC, Design, Build contracts- Infrastructure development potential as per five year plans, central level and state level development.													CO-5 BTL-3		

TEXT BOOKS	
1.	Hans Ottosson. (2013). <i>Practical project management for building and construction</i> , CRC Press.
2.	Gregory K. Mislick, Daniel A. Nussbaum. (2015). <i>Cost Estimation Methods and Tools</i> , Wiley.
3.	M. A. Mian. (2011). <i>Project Economics and Decision Analysis</i> , Volume 1 Deterministic Models, PennWell Corp.
4.	Sengupta. (2002). <i>Construction Management</i> , Tata McGraw Hill.
5.	J.L. Sharma. (2002). <i>Construction Management and accounts</i> . Satya Publications.
6.	D. Lal . (2017). <i>Construction Management and P.W.D. Accounts</i> , S.K. Kataria & Sons.
REFERENCE BOOKS	
1.	Kumar NeerajJha. (2016). <i>Construction Project Management -Theory and Practice</i> , Pearson Publications, 2 nd edition.
2.	Jimmie Hinze. (2015). <i>Construction Contracts</i> , McGraw hill education
3.	Martin Brook. (2004). <i>Estimating and Tendering for Construction Work</i> , Elsevier.
4.	Lukas Klee. (2015). <i>International Construction Contract Law</i> , Wiley.
5.	<i>Construction Contract Administration Practice</i> (2011). The Construction Specifications Institute <i>Guidem</i> , John Wiley & Sons,
E BOOKS	
1.	https://drive.google.com/file/d/1843SibJlBdX3kJqKLDaH6zilZa_EwnMF/view?usp=sharing
2.	https://drive.google.com/file/d/1AG3HJMEJbUf-N7mk_t8TKjMv6dTM4x72/view?usp=sharing
MOOC	
1.	https://www.coursera.org/learn/initiating-planning#syllabus
2.	https://www.coursera.org/learn/construction-cost-estimating#syllabus
3.	https://www.coursera.org/learn/construction-finance#syllabus

COURSE TITLE	CONSTRUCTION PROJECT MANAGEMENT & SCHEDULING			CREDITS	3
COURSE CODE	CEH4376	COURSE CATEGORY	HONORS	L-T-P-S	3-0-0-0
Version	1.0	Approval Details	33 ACM, 05.02.2022	LEARNING LEVEL	BTL-3
ASSESSMENT SCHEME					
First Periodical Assessment	Second Periodical Assessment	Seminar/ Assignments/ Project	Surprise Test / Quiz	Attendance	ESE
15%	15%	10%	5%	5%	50%
Map with multiple courses for 45 Hours per course. End Semester Examination should be conducted per course.					
Course Description	This course specialization will cover the major facets of construction project management. Discover the key project scheduling techniques and procedures including; how to create a network diagram, how to define the importance of the critical path in a project network, and defining project activities float, the relationships connecting construction activities.				
Course Objective	The course should enable the students to 1. Know about the Construction Project Management and the various Project Delivery methods. 2. Gain knowledge on Sustainable Development in construction, Health and Safety in Construction Processes. 3. Learn how to build a project organization and the importance of project planning and scheduling 4. Know about the Scheduling techniques such as Critical Path Method. 5. Gain knowledge on MS project, Primavera software and application of Building Information Management in the construction projects.				
Course Outcome	Upon completion of this course, the students will be able to 1. Apply the various Project Delivery methods in the construction projects. 2. Introduce the Health and Safety Processes in Construction. 3. Apply project planning and scheduling concepts in the construction projects. 4. Apply the Scheduling techniques by Critical Path Method in the construction projects. 5. Compute the latest software applications in construction project management.				
Prerequisites: Nil					

CO, PO AND PSO MAPPING															
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2	PSO 3
CO1	-	-	-	-	-	2	-	2	2	-	3	3	2	-	3
CO2	-	-	2	2	1	2	1	2	-	-	3	3	2	-	3
CO3	2	3	1	2	2	-	-	-	-	-	2	3	3	1	3
CO4	2	3	1	2	2	-	-	-	-	-	2	3	3	1	3
CO5	2	3	1	2	2	-	-	-	-	-	2	3	3	1	3
1: Weakly related, 2: Moderately related and 3: Strongly related															
MODULE 1: CONSTRUCTION INDUSTRY & PROJECT DELIVERY (9)															
Introduction to the Course Construction Industry Overview-Introduction to the Engineering and Construction Industry-Construction Projects and Industry Characteristics- Challenges and Opportunities in the Construction Industry-Program Project and Construction Management Introduction-Construction Management and Project Management- construction project life cycle - different phases –pre project phase- selection of project delivery system, traditional design-tender-build, design-build, the parties and their roles, project manager.														CO-1 BTL-2	
MODULE 2: HEALTH, SAFETY & TECHNOLOGY TRENDS IN CONSTRUCTION (8)															
Sustainability in the Construction Industry-Sustainability in Construction Industry-Safety in Construction Industry -Community Involvement in a Construction Project-Environment, Health and Safety of Construction Processes -Environmental, Health and Safety Practices-Barriers to Learning and Change-Safety Performance Models-Safety, Health and Environment Management Systems- Problem Areas in Construction Safety – Elements of an Effective Safety Programme – Job- Site Safety Assessment – Safety Meetings – Safety Incentives														CO-2 BTL-3	
MODULE 3: PROJECT PLANNING (8)															
Role of a Construction Manager-Being an Effective Project Manager-The Project Organizational Chart-Methods of Contracting-Potential Project Risks-Logistics and Planning-Bidding and Leveling Sheets-Change Order and Claim Management-Role of a project manager. Introduction to Project Planning-Project Planning and Scheduling-The Project Planning Process-Work Breakdown Structure-Standard and Project Coding Part-Project Coding- Estimating Activity Duration Determining Job Logic-Activity Relationships.														CO-3 BTL-3	
MODULE 4 :CONSTRUCTION SCHEDULING (10)															
Introduction to Construction Scheduling-Construction Scheduling Course Overview. Bar (Gantt) Charts-Introducing Bar (Gantt) Charts-Using Bar (Gantt) Charts-Advantages and Disadvantages of Using Bar (Gantt). Activity Precedence Diagrams. Types of Construction Activity Relationships-Activities in a Construction Project-Types of Relationships between Construction Activities-Start to Start Relationships-Finish to Finish Relationships-Multiple Relationships-Forward and Backward Pass Calculations -Forward Pass Calculations- Backward Pass														CO-4 BTL-3	

Calculations. Critical Path-Introduction to Critical Path-Critical Path in a Project Schedule-Determining the Number of Critical Paths in a Project, Types of Floats in a Construction Project.		
MODULE 5: TECHNOLOGY APPLICATIONS FOR SCHEDULING		
The Role of the Scheduler in Construction Management- The Role of the Scheduler in Construction Projects-Ensuring a Project Stays on Track-Keeping Accurate Records of Project Progress. Technology Applications for Scheduling-Technology Applications: Getting Started-Software Applications Overview-MS Project Scheduling Overview-MS Project: A Deeper Dive-Primavera P6 Overview-Primavera P6 Critical Path-Primavera P6: Gantt Chart-Primavera P6 Importing Activities and Running Schedule-Schedule Analysis and Applications-Schedule Application: Building Information Management (BIM) Tools-Scheduling for Large Programs-Scheduling for Large Programs.		CO-5 BTL-3
TEXT BOOKS		
1.	Hans Ottosson. (2012). <i>Practical project management for building and construction</i> , CRC Press.	
2.	Hans Sommer. (2010). <i>Project Management for Building Construction</i> , Springer- Verlag Berlin Heidelberg.	
3.	Sengupta. (2002). <i>Construction Management</i> , Tata McGraw Hill	
4.	Andrew Baldwin, David Bordoli. (2014). <i>Handbook for Construction Planning and Scheduling</i> , Wiley.	
5.	B C Punmia and K K Khandelwal . (2015). <i>Project Planning and Control</i> , Lakshmi Publications pvt Ltd.	
REFERENCE BOOKS		
1.	<i>Code of Practice for Project Management for Construction and Development</i> . (2002).Third edition-The Chartered Institute of Building	
2.	Gary R. Heerkens. (2001). <i>Project Management</i> , McGraw-Hill.	
3.	Paul E Harris. (2006). <i>Planning & Scheduling Using Primavera Version 5.0 for Engineering & Construction</i> , Eastwood Harris Pty Ltd.	
4.	Klaus Neumann, Christoph Schwindt, Jürgen Zimmermann.(2012). <i>Project Scheduling with Time Windows and Scarce Resources</i> .Springer	
E BOOKS		

1.	https://drive.google.com/file/d/1585-cTHsV03NIS2kr1X09c97pMRXl_Sq/view?usp=sharing
2.	https://drive.google.com/file/d/1uRQxmPpGW8Ak-7JRqOrshNWzmF596m5U/view?usp=sharing
3.	https://drive.google.com/file/d/1-lvrVaAYJ9YnwTVH7EtFUUsaNRRhG_Q6/view?usp=sharing
MOOC	
1.	https://www.coursera.org/learn/construction-project-management#syllabus
2.	https://www.coursera.org/learn/construction-scheduling#syllabus

COURSE TITLE	INFRASTRUCTURE PROJECT MANAGEMENT			CREDITS	3
COURSE CODE	CEH4377	COURSE CATEGORY	HONORS	L-T-P-S	3-0-0-0
Version	1.0	Approval Details	33 ACM, 05.02.2022	LEARNING LEVEL	BTL-3
ASSESSMENT SCHEME					
First Periodical Assessment	Second Periodical Assessment	Seminar/ Assignment/ Project	Surprise Test / Quiz	Attendance	ESE
15%	15%	10%	5%	5%	50%
Map with multiple courses for 45 Hours per course. End Semester Examination should be conducted per course.					
Course Description	Scope, time, and cost management are at the heart of successful project management. This course will provide you with the basic principles of urban infrastructure management that are fundamental for building prosperous cities that are sustainable, resilient and efficient. This course will focus on the key support functions-manage risk, control the quality of the deliverables, engage and manage people and procure goods and services.				
Course Objective	The course should enable the students to <ol style="list-style-type: none"> 1. Create a Project Scope Statement and to identify ways to control the scope of the project. 2. Develop Critical Path Schedule and review types of cost estimates and earned value management. 3. Focus on urban infrastructures management. 4. Know about the risks involved in a construction project 5. Know about human recourse and project procurement management. 				
Course Outcome	Upon the completion of the course, the students will be able to <ol style="list-style-type: none"> 1. Create a Project Scope Statement and the ways to control the scope of the project. 2. Perform a cost and time management. 3. Manage urban infrastructure system, Urban Energy Systems and urban transportation system 4. Perform a Qualitative Risk Analysis 5. Execute project procurement. 				
Prerequisites: Nil					

CO, PO AND PSO MAPPING															
CO	PO 1	PO 2	PO 3	P O4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	2	-	2	2	-	3	3	2	1	-
CO2	2	3	1	2	2	-	-	-	-	-	2	3	3	1	-
CO3	-	-	-	2	2	2	-	2	1	2	2	3	1	1	-
CO4	-	-	-	2	2	2	-	2	1	2	2	3	2	1	-
CO5	-	-	-	2	2	2	-	2	1	2	2	3	2	1	-
1: Weakly related, 2: Moderately related and 3: Strongly related															
MODULE 1: SCOPE & WBS (9)															
Course Introduction -Introduction to Specialization -Accessibility and Accommodations Statement- General Course Information-Project Scope Management -Introduction and Objectives- Scope Development -Requirements Development- Scope Control Process.Project Schedule Management - Introduction and Objectives- Work Packages- Steps for Creating a WBS.														CO-1 BTL-2	
MODULE 2 : PROJECT TIME MANAGEMENT (9)															
Project Time Management -Introduction and Objectives- Time Management-Critical Path Method Overview- Types of Diagrams- Activity on Node Example-Finding Critical Path- Forward Pass Diagram -Backward Pass Diagram -Total Slack-Free Slack Cost Estimation -Introduction and Objectives- Preparing an Estimate-Estimate Bases- Type of Estimates- Cost Baseline Project Cost Estimate. Earned Value Management -Introduction and Objectives- Monitoring Project- Calculating Earned Value .														CO-2 BTL-3	
MODULE 3 : URBAN INFRASTRUCTURE MANAGEMENT (9)															
Introduction to Urban Infrastructures - Introduction to the MUI course-Key Challenges to Urban Infrastructures-The main urban infrastructure systems-The main dimensions of urban infrastructures- Introduction to Principles of Urban Infrastructure Management- Managing stakeholders and related performance objectives- The main dimensions for urban infrastructure managers- Schools of thought in managing urban infrastructure systems. Introduction to Urban Energy Management- Introduction to urban energy infrastructures- Understanding urban electricity systems- Managing the urban electricity system- Challenges and opportunities in urban energy systems-Managing Urban Energy Systems - Interview with an Expert from the Veolia group. Introduction to Urban Transport Management -Managing the urban transportation system- Broader challenges and new opportunities.														CO-3 BTL-3	
MODULE 4 : PROJECT RISK & QUALITY MANAGEMENT (9)															
Introduction - Project Risk Management - Introduction and Objectives- Risk Management Processes -Identifying Risks- Developing a Risk Management Plan-Analyze and Prioritize Risks -Develop Risk Responses - Quality Assurance Plan - Introduction and Objectives -Quality Management -Quality Management Plan -Cost of Quality- Tools for Assessing Quality- Control Quality.														CO-4 BTL-3	

MODULE 5: HUMAN RESOURCES & PROCUREMENT MANAGEMENT (9)	
Human Resources Management Plan-Introduction and Objectives -Project Resource Management-Plan Resource Management -Estimate Activity Resources- Acquire Resources- Develop Team -Manage Team- Control Resources- Project Procurement Management -Introduction and Objectives- Project Procurement Management - Project Procurement Plan -Contract Types- Executing Procurement.	CO-5 BTL-3
TEXT BOOKS	
1.	<i>A Guide to the Project Management Body of Knowledge (PMBOK® Guide).</i> (2017). Sixth Edition, Project Management Institute
2.	Gary R. Heerkens.(2002). <i>Project Management.</i> PMP, McGraw-Hill,
3.	<i>Policy Guidance for Investment in Clean Energy Infrastructure.</i> (2015). Expanding Access to Clean Energy for Green Growth and Development.OECD
4.	El-Reedy, Mohamed Abdallah. (2013).CRC Press
REFERENCE BOOKS	
1.	Kumar NeerajJha. (2016). <i>Construction Project Management -Theory and Practice,</i> Pearson publications, 2 nd edition.
2.	Anthony G. Bigio and Bharat Dahiya. (2004). <i>Urban Environment and Infrastructure Toward Liveable Cities,</i> The International Bank for Reconstruction and Development/THE WORLD BANK
3.	Urizar M., Halim E.-S.A.(2015). <i>Construction Supervision QC + HSE Management in Practice: Quality Control, OHS, and Environmental Performance Reference Guide.</i>
4.	Ariaratnam, Samuel T. Rojas, Eddy M. (2009). <i>Building a Sustainable Future,</i> Construction Research Congress 2009 American Society of Civil Engineers.
E BOOKS	
1.	https://drive.google.com/file/d/1umwx6zl0D3Sgvgz2MPdCNuZrndaXcxqh/view?usp=sharing
2.	https://drive.google.com/file/d/1dJCvUSkfHtvDN0IndBqGPOPXIfclUrX/view?usp=sharing
3.	https://drive.google.com/file/d/1U8MEu1i-5NT0Z5RQJqVFpTc0Yp5e5JS7/view?usp=sharing
MOOC	
1.	Engineering Project Management: Scope, Time and Cost Management Coursera
2.	https://www.coursera.org/learn/managing-urban-infrastructures-1#syllabus
3.	https://www.coursera.org/learn/project-risk-quality-management#syllabus

COURSE TITLE	PROJECT MANAGEMENT FOR MANAGERS			CREDITS	3
COURSE CODE	CEH4462	COURSE CATEGORY	HONORS	L-T-P-S	3-0-0-0
Version	1.0	Approval Details	33 ACM, 05.02.2022	LEARNING LEVEL	BTL-3
ASSESSMENT SCHEME					
First Periodical Assessment	Second Periodical Assessment	Seminar/ Assignments/ Project	Surprise Test / Quiz	Attendance	ESE
15%	15%	10%	5%	5%	50%
Map with multiple courses for 45 Hours per course. End Semester Examination should be conducted per course.					
Course Description	Project management is an essential skill-set for many careers and in many contexts in our lives. Project Management is an ideal starting point if you need to manage projects at work or at home, undertaking a project in the near future and are seeking to learn and apply essential project management knowledge and skills.				
Course Objective	<p>The course should enable the students to</p> <ol style="list-style-type: none"> 1. Introduce Construction Project Management, and types of organisations. 2. Know about capital budgeting, risk management and technical analysis of projects. 3. Know about the project team and time management 4. Provides details about probability models in the network and crashing of the network. 5. Discusses the project cost management, control and quality management. 				
Course Outcome	<p>Upon completion of this course, the students will be able to</p> <ol style="list-style-type: none"> 1. Perform a project assessment market demand analysis, financial analysis and project appraisal. 2. Execute capital budgeting and potential risk analysis. 3. Develop project time management scheme using CPM and PERT. 4. Create probability models in network and crashing of network 5. Estimate the project's cost and apply quality control measures with respect to the procurement process. 				
Prerequisites: Nil					

CO, PO AND PSO MAPPING															
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	2	-	2	2	-	3	3	2	2	3
CO2	-	-	2	2	1	2	1	2	-	-	3	3	2	2	3
CO3	2	3	1	2	2	-	-	-	-	-	2	3	3	2	3
CO4	2	3	1	2	2	-	-	-	-	-	2	3	3	2	3
CO5	2	3	1	2	2	-	-	-	-	-	2	3	3	2	3
1: Weakly related, 2: Moderately related and 3: Strongly related															
MODULE 1: PROJECT MANAGEMENT & SELECTION														(9)	
Introduction of Project Management-Project Success-Types of Structure Organizations-Project Management Office-Stakeholders Management-Types of Projects and Project Life Cycle-Project Life Cycle Phases & Project Appraisal-Methods of Project Selection-Market and Demand Analysis -Financial Analysis.														CO-1 BTL-2	
MODULE 2: CAPITAL BUDGETING & RISK MANAGEMENT														(9)	
Capital Budgeting Techniques - Financing of Projects-Risk Management - Risk Management (Control & Documentation)-Stand Alone Risk Analysis-Hillier Model-Simulation Analysis-Decision Tree Analysis- Technical Analysis-Product Mix and Plant Capacity Analysis.														CO-2 BTL-3	
MODULE 3:PROJECT TEAM BUILDING & TIME MANAGEMENT														(9)	
Project Team Building, Conflict and Negotiation-HRM Issues and time Management-Project Time Management- Introduction-Project Time Management (Project Scheduling)-Project time Management- Numbering of Nodes-Project Time Management- PERT Networks-Project Time Management- CPM-Project Time Management- Laddering in PERT/CPM-Probability Models in Networks- I, Probability Model in Networks- II.														CO-3 BTL-3	
MODULE 4: PROBABILITY MODEL IN NETWORKS & CRASHING OF NETWORKS														(9)	
Probability Model in Networks- III-Probability Model in Networks- IV-Simulation of Networks- I-Simulation of Networks- II-Slacks & Floats- I- Slacks & Floats- II-Time and Cost Relationship-Crashing of Networks- I-Crashing of Networks II-Crashing of networks- III.														CO-4 BTL-3	
MODULE 5: PROJECT COST MANAGEMENT & QUALITY MANAGEMENT														(9)	
Crashing of Networks- Introduction to Project Cost Management-Cost Control (Tools and Techniques)-Cost Estimation-Introduction to Quality Management-Cost of Quality-Quality Management (Source of variability and Six Sigma)-Quality Management (Six Sigma Tools) Procurement Management- Project Termination.														CO-5 BTL-3	

TEXT BOOKS	
1.	Roderick A. Munro and Govindarajan Ramu and Daniel J. Zrymiak. (2001). <i>The certified six sigma Green Belt Handbook</i> , ASQ Quality Press and Infotech Standards India Pvt. Ltd.
2.	T. M. Kubiak and Donald W. Benbow. (2011). <i>The Certified Six Sigma Black Belt Handbook</i> , Pearson Publication.
3.	Mitra, Amitava. (2002). <i>Fundamentals of Quality Control and Improvement</i> , Wiley India Pvt Ltd.
4.	Montgomery, D C. (2011). <i>Statistical Quality Control: A modern introduction</i> , Wiley.
REFERENCE BOOKS	
1.	Forrest W. Breyfogle. (2011). <i>Implementing Six Sigma</i> , John Wiley & Sons, INC.
2.	Evans, J R and W M Lindsay. (2012). <i>An Introduction to Six Sigma and Process Improvement</i> , CENGAGE Learning.
3.	Howard S. Gitlow and David M. Levine. (2001). <i>Six Sigma for Green Belts and Champions</i> , Pearson Education, Inc.
4.	Montgomery, D C. (2001). <i>Design and Analysis of Experiments</i> , Wiley
E BOOKS	
1.	https://drive.google.com/file/d/1YBR-r_h2gjOW3gq_tzUa03H1hleIU4Pr/view?usp=sharing
2.	https://drive.google.com/file/d/1R3t9DLaWbRNUm8ieczR32vud14oliCF8/view?usp=sharing
3.	https://drive.google.com/file/d/1IzICo56ZXZmpxaNGj4yJty7YtJqdPEI9/view?usp=sharing
MOOC	
1.	https://nptel.ac.in/courses/110/107/110107081/#