GOVERNMENT POLYTECHNIC, PUNE

'120 – NEP' SCHEME

PROGRAMME	**DIPLOMA IN CE/EE/ET/ME/MT/CM/IT/DDGM**
PROGRAMME CODE	**01/02/03/04/05/06/07/08**
COURSE TITLE	**ENTREPRENEURSHIP DEVELOPMENT AND STARTUPS**
COURSE CODE	**MA41201**
PREREQUISITE COURSE CODE & TITLE	**NA**
CLASS DECLARATION COURSE	**NO**

I. LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Course Type	Learning Scheme					Credits	Assessment Scheme											
			Actual Contact Hrs./Week			SLH	NLH		Paper Duration in Hrs.	Theory				Based on LL & TL				Based on SL		Total Marks
														Practical						
			CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
										Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
MA41201	ENTREPRENEURSHIP DEVELOPMENT AND STARTUPS	AEC	2	--	--	2	4	2	1	15	35*#	50	20			--	--	25	10	75

Total IKS Hrs. for Term: Nil Hrs.

Abbreviations: CL-Classroom Learning, **TL**-Tutorial Learning, **LL**-Laboratory Learning, **SLH**-Self Learning Hours, **NLH**-Notional Learning Hours, **FA** - Formative Assessment**, SA** -Summative Assessment, **IKS** – Indian Knowledge System, **SLA**- Self Learning Assessment

Legends: @-Internal Assessment, **#** - External Assessment, ***#** - Online Examination, **@$** - Internal Online Examination

Note:

FA-TH represents an average of two class tests of 15 marks each conducted during the semester.

1. If a candidate is not securing the minimum passing marks in **FA-PR** (Formative Assessment - Practical) of any course, then the candidate shall be declared as **'Detained'** in that course.
2. If a candidate does not secure the minimum passing marks in the SLA (Self Learning Assessment) of any course, then the candidate shall be declared as **'fail'** and will have to repeat and resubmit the SLA work.
1. **Notional learning hours** for the semester are **(CL + LL + TL + SL) hrs. * 15 Weeks**
3. **1 credit** is equivalent to **30 Notional hours**.
4. * Self-learning hours shall not be reflected in the Timetable.

6.* Self-learning includes micro-projects/assignments/other activities.

II. RATIONALE:

In an ever-changing economy, entrepreneurship is essential for driving innovation, creating jobs, and promoting sustainable development. For diploma engineering students, grasping entrepreneurial concepts is key not only to seeking self-employment but also to becoming valuable contributors within organisations.

This course aims to cultivate an entrepreneurial mindset by integrating creativity, critical thinking, and practical business planning skills. Students learn to identify business opportunities, design feasible startup models, and apply basic financial, marketing, and legal principles. Through exposure to real-world case studies, institutional support systems, and government initiatives, students develop the ability to translate ideas into viable business ventures.

By emphasising innovation, sustainability, and digital readiness, this course nurtures essential 21st-century competencies such as leadership, problem-solving, adaptability, and ethical responsibility—preparing

students to thrive as future entrepreneurs, technopreneurs, and change-makers in the Indian startup ecosystem.

III.INDUSTRY-EXPECTED OUTCOME

- Demonstrate the ability to ideate, design, and manage innovative startups or small enterprises by applying entrepreneurial, financial, and planning skills.
- Uphold Swadeshi values of self-reliance, sustainability, and ethical business for community-centred growth.

IV. COURSE-LEVEL LEARNING OUTCOMES (CO'S)

Students will be able to achieve & demonstrate the following COs on completion of the course-based learning.

CO1: Define key concepts of entrepreneurship and startups and explain their significance in economic development.
CO2: Apply innovative and entrepreneurial principles to identify business opportunities, assess startup ideas, and interpret the supporting ecosystem.
CO3: Develop a simple business plan that addresses customer needs, market trends, financial requirements, and sustainable growth strategies.
CO4: Analyse institutional and financial support systems, legal procedures, and funding opportunities essential for establishing startups and MSMEs.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
UNIT-I INTRODUCTION TO ENTREPRENEURSHIP (CL Hrs-8, Marks-10)				
1.	**TLO 1.1:** Explain the meaning, importance, and economic impact of entrepreneurship and startups. **TLO 1.2:** Describe the role of startups in job creation and problem-solving. **TLO 1.3:** Explain the role of entrepreneurs, especially engineers, in creating innovative businesses. **TLO 1.4:** Identify types of entrepreneurs and their characteristics. **TLO 1.5:** Identify key entrepreneurial qualities like leadership, risk-taking, decision-making, and creativity. **TLO 1.6:** Practice entrepreneurial skills such as problem-solving,	**1.1 Concept and Definitions of Entrepreneurship** Meaning and definitions of *entrepreneur*, *enterprise*, and *entrepreneurship, the* Interrelationship between entrepreneur, enterprise, and entrepreneurship, relevance of entrepreneurship in the modern economy. **1.2 Role and Importance of Entrepreneurship** • Facilitate national and regional economic growth. • Encourage employment generation and sustainable livelihood opportunities. • Advance technological innovation and industrial development. **1.3 Types of Entrepreneurs** • Innovative entrepreneurs, Social	Presentations, Case Studies	**CO1**

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
	communication, negotiation, time management, and goal setting.	entrepreneurs, Technical entrepreneurs, Women entrepreneurs. Examples from various industrial and service sectors. **1.4 Distinction between Entrepreneur, Manager, and Employee** • Comparative roles and responsibilities of entrepreneurs, managers, and employees. • Entrepreneurial approaches to risk management, decision-making, and innovation • Leadership styles and managerial perspectives in entrepreneurship. **1.5 Key Entrepreneurial Competencies and Success Factors:** • Creativity and innovation • Leadership and vision. • Effective decision-making and problem-solving • Perseverance, adaptability, and resilience **1.6 Case Studies of Successful Indian Entrepreneurs and Technopreneurs** • Examine real-world entrepreneurial journeys of successful Indian entrepreneurs and technopreneurs. • Analyse the lessons derived from their achievements and challenges.		
UNIT-II : STARTUPS AND INNOVATION ECOSYSTEM(CL Hrs-8, Marks-10)				
2.	**TLO2.1:** Define Startups and explain their key features and significance in promoting innovation and economic growth. **TLO2.2:** Differentiate between Startups, MSMEs, and traditional businesses based on objectives, innovation levels, and scalability. **TLO2.3:** Describe and categorise the stages of startup development-ideation, validation, scaling, and Sustainability- with suitable examples. **TLO2.4:** Analyse the components of the Indian startup ecosystem, including incubators,	**2.1 Meaning and Features of Startups** • Define startups and explain their key characteristics. • Highlight the importance of startups in driving innovation and economic growth. **2.2 Comparison: Startup, MSME, and Traditional Business** • Differentiate between startups, MSMEs, and conventional business models in terms of goals, scale, and innovation. **2.3 Stages of Startup Development** • **Ideation:** Generating and refining innovative business ideas. • **Validation:** Testing business models and product-market fit. • **Scaling:** Expanding operations and	Presentations, Case Studies	**CO2**

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
	accelerators, mentors, and investors. **TLO 2.5:** Evaluate the impact of government initiatives such as Startup India, Make in India, Digital India, and Atmanirbhar Bharat in fostering new ventures.	market presence. • **Sustainability:** Implementing strategies for long-term growth**.** **2.4 Startup Ecosystem in India** • Understand the roles of incubators, accelerators, mentors, and investors. • Study examples of successful startup ecosystems in India (e.g., Bengaluru, Hyderabad, Pune) • Highlight emerging trends such as sustainability-focused startups, deep tech incubation, and digital transformation accelerators. • Discuss challenges startups face within these ecosystems, such as funding gaps, scaling difficulties, or talent shortages, with examples of how ecosystems address these.		
UNIT-III: BUSINESS PLANNING AND STARTUP STRATEGY (CL Hrs-8, Marks-10)				
3	**TLO 3.1:** Apply entrepreneurial skills to identify customer needs, define value propositions, and align products or services with market demand. **TLO 3.2:** Create a structured business plan defining goals, strategies, financial forecasts, and execution steps for a startup. **TLO 3.3:** Apply cost estimation, pricing, break-even analysis, and working capital management for startups. **TLO 3.4:** Identify funding options for startups. **TLO 3.5:** Write clear funding proposals for startups.	**3.1 Understanding Customer Needs and Value Proposition** • Identify customer problems, needs, and preferences. • Define and communicate the value proposition - how the product or service delivers unique value to customers. **3.2 Steps in Preparing a Business Plan** • **Recognise the main components of a business plan:** idea generation, goal setting, operational planning, and implementation. • **Understand a business plan's purpose** - to organise, manage, and communicate a startup's vision and strategy. **3.3 Market Analysis, Financial Planning, and Resource Management** • Study market trends, competition, and customer demographics. • Perform cost estimation, pricing strategy, profit projection, and break-even analysis. • Manage essential startup resources — manpower, materials, marketing, and	Presentations, Case Studies	**CO3**

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
		finances efficiently. **3.4 Proposal Preparation and Presentation** • Conduct risk assessment to identify and evaluate business risks. • Develop sustainable growth strategies incorporating eco-friendly and ethical practices. • Prepare and present business proposals confidently to investors, mentors, or support institutions.		
UNIT-IV: INSTITUTIONAL SUPPORT AND FUNDING OPPORTUNITIES(CL Hrs-6, Marks-5)				
4	**TLO4.1:** Explain the roles of key institutions (DIC, MSME, NSIC, SIDBI, NABARD, and KVIC) in promoting entrepreneurship through financial, technical, and training support. **TLO 4.2** Identify the functions of startup incubators, accelerators, and EDCs in nurturing innovation, mentoring, and funding entrepreneurial ventures. T**LO4.3:** Differentiate between various funding sources such as government seed funds, venture capital, and angel investments for startups and MSMEs. **TLO4.4:** Examine major government initiatives, including Startup India, Make in India, Digital India, and Atmanirbhar Bharat, for strengthening India's entrepreneurial ecosystem. **TLO4.5:** Evaluate the significance of financial institutions and banks in providing loans, credit facilities, and financial guidance for small businesses. **TLO 4.6:** Describe essential legal and IPR procedures, including business registration, GST, patents, and trademarks. And copyright protection for startups.	**4.1 Major Support Institutions** • **District Industries Centre (DIC):** Provides entrepreneurial guidance, project selection, registration, and links entrepreneurs with financial institutions. • **MSME Ministry:** Facilitates registration, funding, and development programs for micro, small, and medium enterprises. • **NSIC (National Small Industries Corporation):** Offers marketing, credit facilitation through banks, and technology support for MSMEs. • **SIDBI (Small Industries Development Bank of India):** Offers finance, modernisation, and equity schemes for small businesses. • **NABARD & KVIC:** Support rural, agricultural, and village-based enterprises through credit, training, and development schemes. **4.2 Startup Incubators and EDCs** • Provide workspace, mentoring, networking, and early-stage funding for new ventures. • Promote innovation through Entrepreneurship Development Cells (EDCs), accelerators, and incubation programs. **4.3 Funding Sources** • Government: Seed funds, MSME grants, and Startup India financial assistance.	Presentations, Case Studies	**CO4**

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
		• Private: Angel investors, venture capitalists, and crowdfunding platforms. **4.4 Key Government Schemes and Initiatives** • Startup India, Make in India, Digital India, and Atmanirbhar Bharat support innovation, digital growth, and startup ecosystems. **4.5 Role of Financial Institutions** • Banks and cooperative institutions offer loans, credit lines, and advisory services for startups and MSMEs. **4.6 Legal Procedures and Intellectual Property Rights (IPR)** • Overview of business registration, GST compliance, and IPR protection, including patents, trademarks, and copyrights for Startups.		

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL/ TUTORIAL EXPERIENCES.

NOT APPLICABLE

VII. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITIES FOR SPECIFIC LEARNING/SKILLS DEVELOPMENT (SELF-LEARNING)

1. **Micro-Project:** Prepare an online case study presentation on successful Indian entrepreneurs such as Ratan Tata, N. R. Narayana Murthy, and Byju Raveendran, highlighting key entrepreneurial traits.
2. **Self-Learning Activity:** Conduct a virtual brainstorming session to generate innovative startup ideas and prepare a brief concept outline for the most feasible idea.
3. **Assignment:** Develop an analytical report titled **"Startup vs. MSME – A Comparative Study"**, focusing on differences in operations, objectives, and growth potential.
4. **Micro-Project:** Participate in a virtual startup lifecycle simulation covering stages from ideation to sustainability and submit a summary of insights and decisions made.
5. **Assignment:** Create a complete **Business Model Canvas** for a proposed startup using structured formats and digital templates.
6. **Self-Learning Activity:** Perform break-even analysis and sales forecasting using spreadsheet tools, and prepare a short report on financial feasibility.
7. **Assignment:** Compile a digital document summarising major government and institutional support schemes such as DIC, MSME, NSIC, SIDBI, NABARD, and Startup India.
8. **Case-Based Micro-Project:** Analyse the IPR requirements and business registration process for a new start-ups and prepare a case study report.

9. **Micro-Project:** Develop a digital portfolio documenting all entrepreneurial activities completed during the course, and prepare a reflective journal summarising key insights, skills developed, and lessons learned from each practical activity.
10. **Self-Learning Case Study Assignment:** Conduct an in-depth case study analysis of innovative and sustainable startup practices in India (such as Zomato, Ola Electric, Phool.co), and prepare a report highlighting their business models, innovation strategies, and sustainability initiatives.

Note: The above list of micro-projects and assignments is only indicative. Faculty members are expected to prepare their own set of micro-projects, assignments, and activities in a similar manner. Students are required to select any two assignments.

VIII. LABORATORY EQUIPMENT/INSTRUMENTS/TOOLS/SOFTWARE REQUIRED

Sr. No.	Equipment / Tool / Software	Description / Usage
1	Computer / Laptop	For preparing presentations, reports, digital portfolios, and research
2	Internet Access & Wi-Fi Router	For online research, collaboration, and the use of cloud-based tools
3	MS PowerPoint / Google Slides	For creating and delivering presentations
4	Google Forms / MS Forms	For conducting and analysing market surveys
5	Miro / Jamboard (or similar digital whiteboards)	For online brainstorming, idea organisation, and group activities
6	Spreadsheet Software (Excel/Google Sheets)	For financial calculations, break-even and profit analysis
7	Video Conferencing Platforms (Zoom/Google Meet)	For guest lectures, mentorship, and virtual collaboration
8	PDF Reader / Annotation Software	For case study analysis and reading digital course materials
9	Learning Management System (Google Classroom)	To manage course content, assignments, and assessments

IX. SUGGESTED FOR WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

(Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hrs.	R-Level	U-Level	A-Level	Total Marks
1	**I**	Introduction to Entrepreneurship	**CO1**	**8**	**5**	**3**	**2**	**10**
2	**II**	Startups and Innovation Ecosystem	**CO2**	**8**	**4**	**4**	**2**	**10**
3	**III**	Business Planning and Startup Strategy	**CO3**	**8**	**4**	**4**	**2**	**10**
4	**IV**	Institutional Support and Funding Opportunities	**CO4**	**6**	**2**	**2**	**1**	**5**
Grand Total				**30**	**15**	**13**	**7**	**35**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)	Summative Assessment (Assessment of Learning)
1. Online Tests(Two) 2. Micro projects/Assignments for Self-Learning	1. End-of-Semester Online Theory Examination

XI. SUGGESTED COS- POS MATRIX FORM

Course Outcomes (COs)	PO-1 Basic and Discipline-Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability, and Environment	PO-6 Project Management	PO- 7 Lifelong Learning	PSO-1	PSO-2
CO1	**3**	**--**	**--**	**–**	**2**	**--**	**2**	**--**	**–**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**--**
CO3	**2**	**2**	**3**	**2**	**3**	**3**	**2**	**2**	**2**
CO4	**2**	**3**	**2**	**--**	**2**	**3**	**2**	**--**	**--**
Legends:- High:3, **Medium:**2, **Low:**1, **No Mapping:** --									
*PSOs are to be formulated at the Program level									

XII. SUGGESTED LEARNING MATERIALS/BOOKS

Sr. No.	Author(s)	Title	Publisher, Edition, and ISBN
1	Robert D. Hisrich, Michael P. Peters, and Dean A. Shepherd	*Entrepreneurship*	McGraw-Hill Education, 10th Edition, ISBN: 978-0078112843
2	Vasant Desai	*Dynamics of Entrepreneurial Development and Management*	Himalaya Publishing House, 6th Edition, ISBN: 978-9352026630
3	Poornima M. Charantimath	*Entrepreneurship Development and Small Business Enterprises*	Pearson Education, 3rd Edition, ISBN: 978-9332585546
4	S. S. Khanka	*Entrepreneurial Development*	S. Chand Publishing, Revised Edition, ISBN: 978-8121918015
5	Eric Ries	*The Lean Startup*	Crown Business, 1st Edition, ISBN: 978-0307887894
6	Alexander Osterwalder and Yves Pigneur	*Business Model Generation*	Wiley, 1st Edition, ISBN: 978-0470876411
7	Donald F. Kuratko	*Entrepreneurship: Theory, Process, and Practice*	Cengage Learning, 10th Edition, ISBN: 978-1305576247

XIII. LEARNING WEBSITES & PORTALS

Sr.No.	Link/Portal	Description
1	https://www.startupindia.gov.in/	Information on the Startup India initiative and government schemes for startups.
2	https://www.niti.gov.in/swadeshi-abhiyan	Resources on Swadeshi Abhiyan and self-reliance in Indian businesses.
3	https://www.entrepreneur.com/	Articles and case studies on entrepreneurship and startups.
4	https://www.yourstory.com/	Stories of Indian startups and entrepreneurs.
5	https://www.edx.org/learn/entrepreneurship	Free online courses on entrepreneurship basics.
6	https://www.coursera.org/learn/entrepreneurship	Online learning resources for startups and business planning.
7	https://www.score.org/resource/business-plan-template-startup-business	Templates for business plans and Business Model Canvas.

Name & Signature:

Shri. S.B. Kulkarni
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HoD in Mechanical Engineering

(Course Experts)

Name & Signature:	Name & Signature:
Shri. P.B. Kamble (Programme Head)	**Shri. S.B. Kulkarni** (CDC In-charge)

GOVERNMENT POLYTECHNIC, PUNE

'120 – NEP' SCHEME

PROGRAMME	**DIPLOMA IN CE/EE/ET/ME/MT/CM/IT/DDGM**
PROGRAMME CODE	**01/02/03/04/05/06/07/08**
COURSE TITLE	**ENGINEERING MANAGEMENT**
COURSE CODE	**MA41202**
PREREQUISITE COURSE CODE & TITLE	**NA**
CLASS DECLARATION COURSE	**NO**

I. LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Course Type	Learning Scheme					Credits	Assessment Scheme											
			Actual Contact Hrs./Week			SLH	NLH		Paper Duration Hrs	Theory				Based on LL & TL				Based on SL		Total Marks
														Practical						
			CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
										Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
MA41202	ENGINEERING MANAGEMENT	AEC	3	--	--	1	4	2	2	30	70*#	100	40	--	--	--	--	25	10	125

Total IKS Hrs. for Term: Nil Hrs.

Abbreviations: CL-Classroom Learning, **TL**-Tutorial Learning, **LL**-Laboratory Learning, **SLH**-Self Learning Hours, **NLH**-Notional Learning Hours, **FA** - Formative Assessment**, SA** -Summative Assessment, **IKS** – Indian Knowledge System, **SLA**- Self Learning Assessment

Legends: @-Internal Assessment, # - External Assessment, *# - Online Examination, **@$** - Internal Online Examination

Note:

FA-TH represents an average of two class tests of 30 marks each conducted during the semester.

1. If a candidate is not securing the minimum passing marks in **FA-PR** (Formative Assessment - Practical) of any course, then the candidate shall be declared as **'Detained'** in that course.
2. If a candidate does not secure the minimum passing marks in the SLA (Self Learning Assessment) of any course, then the candidate shall be declared as **'fail'** and will have to repeat and resubmit the SLA work.
3. Notional learning hours for the semester are (CL + LL + TL + SL) hrs. * 15 Weeks
4. **1 credit** is equivalent to **30 Notional hours**.
5. * Self-learning hours shall not be reflected in the Timetable.
6. * Self-learning includes micro-projects/assignments/other activities.

II. RATIONALE:

This course builds core managerial, operational, and quality management competencies essential for engineering professionals. It focuses on management principles, organisational frameworks, and self-management abilities that promote effective leadership and teamwork.

Students learn to apply creative problem-solving and project management tools such as PERT, CPM, and Gantt charts for efficient project planning and execution.

The curriculum integrates concepts of product development, sustainability, and customer-centric practices with modern quality methodologies, including TQM, Six Sigma, ISO standards, and ERP systems. Additionally, modules on inventory management, digital tracking, marketing, and Customer Relationship Management (CRM) enable learners to bridge technical expertise with managerial proficiency, preparing them for success in contemporary engineering and industrial environments.

III. INDUSTRY-EXPECTED OUTCOME

Students will be able to apply management principles, implement project planning tools, and utilise quality improvement techniques to enhance productivity, safety, and regulatory compliance; and operate ERP, inventory management, and digital marketing/CRM tools to optimise resources and improve customer engagement.

IV. COURSE-LEVEL LEARNING OUTCOMES (CO'S)

Students will be able to achieve & demonstrate the following COs on completion of the course-based learning.

- **CO1:** Apply fundamental principles of management and demonstrate self-management, interpersonal, and leadership skills for effective functioning in technical and industrial environments.
- **CO2:** Apply principles of product, operations, and project management to plan, design, and manage innovative and sustainable engineering solutions using appropriate tools and techniques.
- **CO3:** Apply modern quality management techniques and international standards (ISO, OSHA) to improve organisational processes, ensure compliance, and enhance customer-focused performance using ERP systems.
- **CO4:** Analyse and apply inventory management concepts and control techniques, using digital tools and technologies to optimise stock levels and ensure efficient, accurate, and sustainable industrial operations.
- **CO5:** Apply marketing and CRM concepts to design and implement digital and customer-centric strategies that enhance engagement, satisfaction, and long-term relationships in engineering and industrial sectors.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
UNIT I: PRINCIPLES OF MANAGEMENT (CL Hrs-9, MARKS-15)				
1.	**TLO 1.1:** Understand management concepts, functions, and industrial challenges. **TLO 1.2:** Explain and compare Taylor's and Fayol's management principles. **TLO 1.3:** Distinguish management levels and apply functions at the supervisory level. **TLO 1.4:** Demonstrate self-management skills, including goal setting, time, and stress management **TLO 1.5:** Apply interpersonal	**1.1 Meaning and Importance of Management:** Understanding the definition, need, characteristics, main functions, and challenges faced by managers in industries. **1.2 Forms of Business Ownership:** Introduction to Business Ownership, Sole Proprietorship, Partnership, Limited Liability Partnership (LLP), Cooperative Society, Limited Liability Company (LLC), Private Limited Company, Public Limited Company **1.3 Scientific Management:** Introduction to the principles of Frederick Taylor (efficiency and productivity) and Henry Fayol (planning, organising, commanding, coordinating, controlling).	• Online Lecturers. • Group discussions through forums or chat. • Case studies and real-world examples. • Self-study using reading materials and videos.	**CO1**

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
	and managerial skills for effective teamwork and leadership.	**1.4 Levels and Functions of Management:** Study of management levels-top, middle, and supervisory-with focus on supervisory-level responsibilities in technical and industrial settings. **1.5 Self-Management Skills:** Developing personal skills such as self-awareness, discipline, motivation, goal setting, time management, stress management, decision-making, work-life balance, and multitasking. **1.6 Managerial and Interpersonal Skills:** Overview of essential skills like negotiation, teamwork, conflict resolution, leadership, and giving or receiving constructive feedback for effective workplace management.		
UNIT-II PRODUCT, OPERATIONS, AND PROJECT MANAGEMENT (CL Hrs-9, MARKS-15)				
2.	**TLO 2.1:** Apply creative problem-solving to develop innovative solutions. **TLO 2.2:** Describe new product development stages and the role of change management **TLO 2.3:** Understand and demonstrate planning and management of sustainable, customer-focused products. **TLO 2.4:** Analyze the significance of project management, its core areas, and associated problem-solving aspects **TLO 2.5:** Apply PERT, CPM, and Gantt charts to plan and manage engineering projects.	**2.1 Creativity and Innovation Management:** Explore the concepts of creativity and innovation through problem-solving techniques, including brainstorming, checklists, reverse brainstorming, morphological analysis, and the Six Thinking Hats method. **2.2 New Product Development:** Stages involved in new product development and the importance of managing changes effectively throughout the product lifecycle. **2.3 Product Management Fundamentals:** Key principles and steps involved in planning, designing, developing, and managing products that meet industry standards, customer needs, and sustainability goals. **2.4 Project Management Overview:** Importance, key focus areas, 4Ps (Project, Product, Process, People), and phases of project execution.	• Online Lecturers. • Group discussions through forums or chat. • Case studies and real-world examples. Self-study using reading materials and videos.	CO1, CO2

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
		2.5 Project Management Tools and Techniques: Essential tools such as PERT, CPM, and Gantt Charts are used for project planning, monitoring, estimation, and budgeting in engineering applications.		
UNIT-III: INDUSTRIAL QUALITY MANAGEMENT (CL Hrs-8, MARKS-12)				
3	**TLO 3.1:** Understand and apply modern quality management techniques to improve organisational processes. **TLO 3.2:** Describe and apply ISO and OSHA standards to ensure quality, safety, and environmental compliance. **TLO 3.3:**Understand and utilise ERP systems to integrate engineering and business operations effectively. **TLO 3.4:** Understand and implement customer-focused practices to enhance service quality and drive continuous improvement.	**3.1 Modern quality management approaches:** TQM, Six Sigma, Kaizen, Quality Circles, 5S, Lean Manufacturing, TPM, Kanban, FMEA. **3.2 Application and importance of international standards:** ISO 9001:2016, ISO 14000 (environment), OSHA 2020 (safety). **3.3 Enterprise Resource Planning (ERP) Systems:** Overview of ERP systems and their role in monitoring quality, ensuring standard compliance, and integrating engineering processes. **3.4 Service Quality and Customer-Centric Practices:** Key drivers of performance and long-term business success are high service quality, customer satisfaction, and continuous improvement.	• Online Lecturers. • Group discussions through forums or chat. • Case studies and real-world examples. • Self-study using reading materials and videos.	CO1, CO2, CO3
UNIT-IV: INVENTORY MANAGEMENT (CL Hrs-8, MARKS-12)				
4	**TLO 4.1:** Explain inventory concepts, objectives, and importance, and classify its various types. **TLO 4.2:** Apply ABC analysis, calculate EOQ, determine reorder levels and safety stock **TLO 4.3:** Explain ethical and environmental responsibilities, incorporating Swadeshi principles.	**4.1 Introduction to Inventory Management:** • Understand the definition, objectives, and importance of inventory in engineering industries. • Different types of inventory: raw materials, work-in-progress (WIP), finished goods, spare parts, and consumables. **4.2 Inventory Control Techniques:** • **ABC Analysis:** Categorising inventory items based on value and usage. • Economic Order Quantity (EOQ) for determining optimal order quantities. • Concepts of reorder level and safety stock to maintain continuity. • Periodic versus continuous review systems for inventory monitoring.	• Live online Online Lecturers. • Group discussions through forums or chat. • Case studies and real-world examples. • Self-study using reading materials and videos	CO2, CO3, CO4

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
		4.3 Inventory Management Systems: • Compare manual record-keeping with computerised inventory management and understand their practical applications in various technical fields. • Use simple digital tools and spreadsheets to track materials, monitor stock levels, and generate basic reports efficiently. • Apply barcodes, QR codes, and RFID technology for accurate, real-time monitoring and streamlined inventory operations. • Implement basic inventory audits, stock verification, and reporting procedures suitable for any technical or industrial environment.		
UNIT-V: MARKETING AND CUSTOMER RELATIONSHIP MANAGEMENT (CRM) (CL Hrs-11, MARKS-16)				
	TLO 5.1: Understand marketing fundamentals, including the difference between marketing and selling, and the application of the 4Ps to engineering products and services. **TLO 5.2:** Explain the use of digital platforms-social media, SEO, online campaigns, websites, and email-for promoting products and tracking customer engagement. **TLO 5.3:** Apply CRM principles and tools, including feedback mechanisms, to maintain effective customer relationships in engineering industries.	**5.1 Introduction to Marketing:** • Basic concepts of marketing, the difference between marketing and selling. • Market segmentation, targeting, and branding. • Marketing Mix (4Ps) for Engineering Products/Services - Product, Price, Place, Promotion and their application. • Importance of customer needs, value creation, and market research in engineering fields. **5.2 Digital Marketing:** • Use of social media, Search Engine Optimisation (SEO), and online campaigns for promotion and customer engagement. • Role of websites, email marketing, and digital advertisements in industrial marketing. • Overview of marketing analytics - tracking customer responses and measuring campaign performance.	• Online Lecturers. • Group discussions through forums or chat. • Case studies and real-world examples. • Self-study using reading materials and videos	

Sr. No	Theory Learning Outcomes (TLOs) aligned to COs.	Learning content mapped with TLOs.	Suggested Learning Pedagogies	Relevant COs
		5.3 Customer Relationship Management (CRM): • Principles and objectives of CRM. • Measuring customer satisfaction and feedback mechanisms. • Strategies to build and maintain long-term customer relationships. • Role of CRM software (e.g., Salesforce, Zoho CRM) in managing customer data and after-sales service. • Importance of after-sales service, technical support, and complaint handling in engineering industries.		

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL/ TUTORIAL EXPERIENCES.

NOT APPLICABLE

VII. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF-LEARNING)

Each micro-project, assignment, or activity is to be assigned to an individual student:

a) **Management Functions Case Study:** Select a local industry or department. Identify how planning, organising, leading, and controlling are applied. Prepare a 1–2 page report with examples.

b) **Time and Self-Management Exercise:** Create a weekly personal schedule demonstrating goal-setting, prioritisation, and stress management strategies. Reflect on its effectiveness in a short paragraph.

c) **Gantt Chart & PERT Diagram:** Choose a small engineering project (real or hypothetical). Prepare a Gantt chart and PERT diagram showing tasks, dependencies, and timelines.

d) **Innovation Application:** Select a product and suggest one innovative improvement. Explain how creative problem-solving tools (brainstorming, Six Thinking Hats, or morphological analysis) were applied.

e) **Sustainable Product Planning:** Identify an engineering product and outline a plan to make it more sustainable and customer-focused. Include steps for design and implementation.

f) **Quality Tool Implementation:** Apply one quality management technique (TQM, Kaizen, or 5S) to a small process at home or in a workshop. Document steps and improvements achieved.

g) **ISO & Safety Standards Analysis:** Research ISO 9001/ISO 14000 or OSHA standards. Prepare a 1-page summary explaining how compliance improves productivity, safety, and sustainability.

h) **ERP Observation Exercise:** Explore an ERP software demo (like SAP, Tally, or Odoo). List at least five features that support quality management or inventory tracking.

i) **EOQ & Reorder Level Calculation:** Take 5–10 items from your household or workshop. Calculate EOQ, reorder levels, and safety stock. Present results in a table.

j) **ABC Classification Exercise:** Classify the same items using ABC analysis. Suggest simple monitoring methods for each category.

k) **Digital Inventory Tracking:** Demonstrate using a spreadsheet or free software to track inventory. Include features like stock addition, removal, and low-stock alerts.

l) **Marketing Mix Assignment:** Choose an engineering product. Explain the 4Ps (Product, Price, Place, Promotion) and how they can be applied.

m) **Digital Marketing Mini-Plan:** Draft a basic digital marketing strategy using social media, SEO, or email campaigns for the chosen product.

Note: Students are required to **select one assignment from each unit** as outlined below:

- **Unit I:** Select either (a) or (b)
- **Unit II:** Select one from (c), (d), or (e)
- **Unit III:** Select one from (f), (g), or (h)
- **Unit IV:** Select one from (i), (j), or (k)
- **Unit V:** Select one from (l), or (m)

VIII. LABORATORY EQUIPMENT/INSTRUMENTS/TOOLS/SOFTWARE REQUIRED

NOT APPLICABLE

IX. SUGGESTED FOR WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE

(Specification Table)

Sr. No	Unit	Unit Title	Aligned COs	CL Hrs	R-Level	U-Level	A-Level	Total Marks
1	I	Principles of Management	CO1	9	5	6	4	15
2	II	Product, Operations, and Project Management	CO1, CO2	9	4	5	6	15
3	III	Industrial Quality Management	CO1, CO2, CO3	8	3	5	4	12
4	IV	Inventory Management	CO2, CO3, CO4	8	3	4	5	12
5	V	Marketing and Customer Relationship Management (CRM)	CO4,CO5	11	4	6	6	16
			Total	**45**	**19**	**26**	**25**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)	Summative Assessment (Assessment of Learning)
1. MCQ-Based Class Test 2. Self Learning Activities / Assignment	1. End-of-Semester MCQ-based online Theory Examination

XI. SUGGESTED COS- POS MATRIX FORM

Course Outcomes (COs)	PO-1 Basic and Discipline-Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability, and Environment	PO-6 Project Management	PO- 7 Lifelong Learning	PSO-1	PSO-2
CO1	2	2	2	--	3	3	3	--	--
CO2	3	3	3	3	2	3	2	2	2
CO3	2	3	3	3	3	3	2	3	2
CO4	2	3	2	3	2	3	2	3	3
CO5	2	2	3	2	3	3	3	--	2
Legends:- High:3, **Medium:**2, **Low:**1, **No Mapping:** --									
*PSOs are to be formulated at the Program level									

XII. SUGGESTED LEARNING MATERIALS/BOOKS

Sr. No.	Author(s)	Title	Publisher & Edition with ISBN
1	Stephen P. Robbins, Mary Coulter	*Management* (15th Indian Edition)	Pearson India, 2023. ISBN: 978-9356064911 (Pearson Education)
2	Karminder Ghuman	*Indian Management: Perspectives & Models*	Bloomsbury India, 1st Edition (2018). ISBN: 978-9387863255 (Bloomsbury Publishing)
3	Jack R. Meredith, Scott M. Shafer, Ramesh Anbanandam	*Project Management: A Managerial Approach* (11th Indian Adaptation)	Wiley India, 2022. ISBN: 978-9354641176 (Atlantic Books)
4	Neeru Kapoor	*Concept Building Approach to Digital Marketing* (2nd Ed.)	Cengage India, 2022. ISBN: 978-9355730305 (cengage.co.in)
5	Vandana Ahuja	*Digital Marketing*	Oxford University Press, 1st Edition (2016). ISBN: 978-0199455447 (Sapna Online)
6	Nitin C. Kamat, Chinmay Nitin Kamat	*Digital Marketing*	Himalaya Publishing House, 1st Edition. ISBN not listed explicitly. (himpub.com)
7	K. S. Menon	*Purchasing and Inventory Management*	Shroff Publishers & Distributors, 1st Edition (2011). ISBN: 978-8184047066 (Sapna Online)
8	Nidhi Chandorkar, Tushar Agarwal	*Indian Ethos in Management*	Himalaya Publishing House, 1st Edition (2017). ISBN: 978-93-5262-504-8 (himpub.com)

Sr. No.	Author(s)	Title	Publisher & Edition with ISBN
9	Prof. (Dr.) Moloy Ghoshal	*A Text Book on Customer Relationship Management (CRM) – A Journey from Suspect to Advocate*	Shashwat Publication, 1st Edition. ISBN: 978-93-6087-141-3 (shashwatpublication.com)
10	Dr. Munmun Mohanty, Dr. N.M. Khandelwal	*Management Practices and Thoughts in Ancient India*	Himalaya Publishing House, 1st Edition (2024). ISBN: 978-93-6557-797-6 (himpub.com)

XIII. LEARNING WEBSITES & PORTALS

Sr. No.	Link / Portal	Description
1	http://www.coursera.org/courses?query=management	Offers a wide range of online courses on management concepts, leadership, functions of management and more - useful for your Unit I content. (Coursera)
2	http://alison.com/courses/management	Free courses focused on management fundamentals, including definitions, management levels, supervisory skills - a good fit for Unit I. (Alison)
3	http://grow.google/intl/in/courses	Free digital marketing training, including online campaigns, SEO, and social media - useful for Unit V content. (Grow with Google)
4	http://mygreatlearning.com/academy/learn/inventory-management-free-course	Free beginner-friendly course on inventory management basics (types, importance, control) - aligns well with Unit IV. (mygreatlearning.com)
5	http://alison.com/course/inventory-and-warehouse-management	A free course focusing on warehouse, inventory, stock & supply chain management - also relevant to Unit IV. (Alison)
6	http://www.pmi.org/learning/training-development/online-courses	Free short courses on project management basics, which map well to Unit II (project management tools). (pmi.org)
7	http://mindtools.com/pages/main/newMN_HTE.htm	A resource site for self-management, interpersonal skills, leadership, time and stress management - good for the Unit I skills section. (mindtools.com)
8	http://classcentral.com/subject/inventory-management	Aggregator of many inventory-management and control technique courses - great for deeper learning in Unit IV. (Class Central)

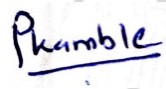
Sr. No.	Link / Portal	Description
9	http://oxfordhomestudy.com/courses/warehouse-inventory-management	Free access to warehouse/inventory courses suitable for Unit IV and supply-chain aspects. (Oxford Home Study College)
10	http://www.life-global.org/course/inventory-management	Free course introducing methods of inventory management and technology usage - aligns with Unit IV content on systems and tools. (life-global.org)

Name & Signature:

Shri. S.B. Kulkarni
Lecturer in Mechanical Engineering

Dr. N. G. Kulkarni
HoD in Mechanical Engineering

(Course Experts)

Name & Signature:	**Name & Signature:**
 **Shri.P.B. Kamble** (Programme Head)	 **Shri. S.B. Kulkarni** (CDC In-charge)

GOVERNMENT POLYTECHNIC, PUNE

'120 – NEP' SCHEME

PROGRAMME	**DIPLOMA IN MT**
PROGRAMME CODE	**05**
COURSE TITLE	**SEMINAR**
COURSE CODE	**MT41208**
PREREQUISITE COURSE CODE & TITLE	**ACQUIRED MINIMUM OF 60 CREDITS**
CLASS DECLARATION COURSE	**YES**

I. LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Course Type	Learning Scheme					Credits	Assessment Scheme											
			Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
														Practical						
			CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
										Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
MT41208	SEMINAR	AEC	--	--	2	--	2	1	--	--	--	--	--	25	10	25@	10	--	--	50

Total IKS Hrs. for Term: Nil Hrs.

Abbreviations: CL-Classroom Learning, **TL**-Tutorial Learning, **LL**-Laboratory Learning, **SLH**-Self Learning Hours, **NLH**-Notional Learning Hours, **FA** - Formative Assessment**, SA** -Summative Assessment, **IKS** – Indian Knowledge System, **SLA**- Self Learning Assessment

Legends: @-Internal Assessment, # - External Assessment, *# - Online Examination, **@$** - Internal Online Examination

Note:

1. If a candidate is not securing the minimum passing marks in **FA-PR** (Formative Assessment - Practical) of any course, then the candidate shall be declared as **'Detained'** in that Course.
2. If a candidate does not secure the minimum passing marks in the SLA (Self Learning Assessment) of any course, then the candidate shall be declared as **'fail'** and will have to repeat and resubmit the SLA work.
3. **Notional learning hours** for the semester are **(CL + LL + TL + SL) hrs. * 15 Weeks**
4. **1 credit** is equivalent to **30 Notional hours**.
5. * Self-learning hours shall not be reflected in the Timetable.
6. * Self-learning includes micro-projects/assignments/other activities.

II. RATIONALE:

The Seminar course helps diploma engineering students develop key communication and presentation skills essential for their professional growth. By researching and presenting technical topics clearly and confidently, students improve their ability to explain complex ideas to different audiences. This course encourages critical thinking, deep inquiry, and effective sharing of knowledge, preparing students to meet industry standards and succeed in lifelong learning.

Participating in seminars also develops valuable soft skills, such as public speaking, handling questions, and professional interaction—essential attributes for a successful engineering career.

III. INDUSTRY EXPECTED OUTCOME

This course is designed to enable students to develop the industry-relevant competency of:

Students will gain the skills to research, organize, and clearly present technical topics, building confidence and professional communication for engineering careers.

IV. COURSE-LEVEL LEARNING OUTCOMES (COs)

Students will be able to achieve & demonstrate the following COs on completion of the course-based learning.

CO1: Identify a relevant seminar topic aligned with the student's engineering discipline.
CO2: Analyse technical information gathered from credible literature and digital resources.
CO3: Create structured seminar presentations using appropriate software tools and visual techniques.
CO4: Deliver seminar presentations confidently, demonstrating effective time management and audience engagement.
CO5: Prepare a well-formatted seminar report that documents the research process and findings.

V. GENERAL GUIDELINES FOR SEMINAR

i) Seminar Topic Selection and Scope

- The seminar topic should be relevant to the Metallurgical Engineering discipline and focus on current or emerging technologies in metal extraction, processing, casting, heat treatment, material testing, alloy development, powder metallurgy, or industrial metallurgy.
- Interdisciplinary topics are encouraged, particularly those that address practical industrial or societal challenges such as sustainable materials, recycling, corrosion prevention, and advanced manufacturing.
- Students should choose topics that align with their technical skills, theoretical knowledge, and personal interests, with guidance from faculty mentors.
- Seminar topics should reflect contemporary industry trends and national priorities, including sustainability in materials engineering, digitalization and automation in metallurgical processes, energy-efficient production, advanced alloys, and socio-technical innovations contributing to community and national development.

ii) Seminar Preparation and Mentorship

- The seminar is an individual assignment carried out under the guidance of a faculty member.
- The faculty assists students in choosing topics, researching methods, preparing presentations, and writing reports.
- Faculty members should regularly monitor student progress through meetings, feedback sessions, and continuous evaluation.

iii) Seminar Content and Delivery

- Students should prepare a well-organised presentation using appropriate software tools like PowerPoint.
- The presentation should cover an introduction, literature review, analysis, applications, case studies, and conclusions.
- The seminar should last about 15 to 20 minutes, including a question-and-answer session.
- Active participation in discussions with peers is encouraged.

iv) Seminar Report and Submission

Students must prepare and submit a comprehensive seminar report that includes the following:

- Cover Page and Title Page
- Certificate from Faculty Guide

- Acknowledgement
- Abstract
- Table of Contents
- Chapters (Introduction, Literature Review, Analysis, Conclusion)
- References and Bibliography
- The report should be neatly formatted, 25–30 pages in length, typed in Times New Roman, 12-point font, with justified alignment.
- Both hard and soft copies of the report and presentation must be submitted.

v) Seminar Documentation and Evaluation

- The seminar work should include complete documentation, such as presentation slides,
- research materials, and records of faculty mentor guidance and feedback.
- Evaluation will be based on the topic's relevance, research depth, presentation quality, ability
- to answer questions, and the overall standard of the seminar report.
- Each student must keep a brief seminar diary or logbook to record progress, important
- preparation milestones, and feedback received during mentoring.

VI. COURSE IMPLEMENTATION STAGES

1. Student-Faculty Mapping

- Each student will be assigned a faculty guide based on their interests and expertise.
- Faculty guide will support students throughout topic selection, research, and presentation stages

2. Seminar orientation:

- The assigned faculty guide will conduct the seminar orientation.
- Students will be introduced to the seminar's objectives and expected outcomes.
- Guidelines for selecting topics, preparing the seminar, and presenting will be explained.

3. Seminar Topic Identification and Approval Students will:

- Explore recent trends, technologies, or industry-relevant issues under faculty supervision
- Select a seminar topic that is current, relevant, and feasible
- Present the chosen topic for faculty approval early in the semester

4. Information Collection and Research

A dedicated period is provided for students to:

- Gather authentic technical data, literature, and supporting research for their seminar
- Consult with mentors regarding scope and content

5. Seminar Planning

Students will structure their seminar by:

- Organizing content, preparing slides, and planning the flow of their presentation
- Allocating time for introduction, discussion, and Q&A
- Reviewing material with their mentor

6. Seminar Report and Submission

Students are required to submit:

- A soft copy and a hard copy of their seminar report, including all required sections (Introduction, Literature Review, Analysis, Conclusion, References)
- Supporting presentation material (e.g., PowerPoint slides)

7. Seminar Presentation and Feedback

Students deliver the seminar in the presence of peers and faculty:

- Present and explain their topic, respond to questions, and participate in discussions
- Receive feedback from mentors and evaluators for improvement

8. Final Assessment

Performance is evaluated based on:

- Content quality, clarity of presentation, handling of Q&A, and professionalism.
- Quality of the report and preparedness.

VII. DETAILED WEEKWISE TIMELINE FOR THE COURSE IMPLEMENTATION STAGES:

Week	Activity	Responsibilities
Week 1	**Student–Faculty Mentor Mapping**	Students are assigned faculty mentors based on their area of interest and mentor expertise.
Week 2	**Orientation Session**	The faculty coordinator introduces seminar objectives, guidelines, timelines, and assessment criteria.
Week 3	**Topic Identification**	Students identify a potential seminar topic under a faculty guide.
Week 4	**Topic Approval**	Finalization and approval of the seminar topic by the faculty guide.
Week 5–6	**Research and Literature Review**	Students collect relevant information, conduct literature surveys, and discuss findings with the guide.
Week 7	**Seminar Outline Preparation**	Drafting of seminar structure, flow of content, and key discussion points.
Week 8	**Slide Development**	Preparation of presentation slides and visual materials; preliminary review by mentors.
Week 9	**Progress Review Meeting**	Students present a preliminary outline and receive mentor feedback for improvement.
Week 10–11	**Seminar Practice & Refinement**	Mock presentations, peer reviews, and multiple iterations under mentor supervision.
Week 12	**Drafting Seminar Report**	Preparation of the draft seminar report covering introduction, methodology, findings, and conclusions.
Week 13	**Report Evaluation & Feedback**	Faculty mentor reviews the draft and provides corrections and suggestions.
Week 14	**Finalization of Report & Presentation**	Students incorporate feedback and finalize the report, slides, and supplementary materials.
Week 15 as per the Examination schedule	**Seminar Presentation Sessions, Submission & Evaluation**	Students deliver final presentations followed by Q&A with faculty and peers. Submission of final report (hardcopy & softcopy); the faculty evaluates and awards grades.

VIII. CRITERIA FOR ASSESSMENT/EVALUATION OF SEMINAR WORK

A. Formative Assessment (FA) Criteria

The evaluation of students in the seminar course during the sixth semester for Formative Assessment (FA_PR), with a total of **25 marks**, will be conducted based on the following criteria:

Sr. No.	Criteria	Scale (1-5 Marks)	Marks Obtained
1	Seminar Topic Selection and Problem Clarity	**1 - Poor:** Topic unclear or irrelevant. **2 - Fair:** Some clarity, partially relevant, lacks focus. **3 - Satisfactory:** Relevant and generally clear, moderately defined. **4 - Good:** Clearly defined, relevant, and well stated. **5 - Outstanding:** Exceptionally clear, highly relevant, innovative, with strong impact potential.	
2	Literature and Data Quality	**1 - Poor:** Sources are inadequate, outdated, or irrelevant. **2 - Fair:** Limited sources with unclear relevance and superficial evaluation. **3 - Satisfactory:** Adequate number of relevant sources with basic critical assessment. **4 - Good:** Well-selected, relevant sources with good critical evaluation. **5 - Excellent:** Extensive, current, and highly relevant sources with thorough critical appraisal.	
3	Content Organisation and Creativity	**1 - Poor:** Topic unclear, irrelevant, or undefined. **2 - Fair:** Partially clear and relevant; lacks focus. **3 - Satisfactory:** Relevant, mostly clear, moderately defined. **4 - Good:** Clearly defined, relevant, and appropriate. **5 - Outstanding:** Exceptionally clear, relevant, innovative, high impact.	
4	Progress and Timeline Adherence	**1 - Poor:** No progress; misses all deadlines. **2 - Fair:** Much behind schedule; few milestones met. **3 - Satisfactory:** Moderate progress; some delays. **4 - Good:** Mostly on schedule; key milestones met. **5 - Excellent:** Fully on time; all milestones achieved.	
5	Presentation and Report Effectiveness	**1 - Poor:** Unclear, disorganised, unprofessional, incomplete. **2 - Fair:** Basic structure with major gaps and inconsistencies. **3 - Satisfactory:** Clear and organised; covers key points adequately. **4 - Good:** Well-structured, clear, professional; effective communication. **5 - Excellent:** Exceptionally clear, polished, professional; thorough and impactful.	

Note: The Total **Formative Assessment (FA_PR) Marks** for the individual student.

B. Summative Assessment Criteria

*The summative assessment for students in the Sixth Semester **SA-PR** will carry a total of **25 marks** and shall be conducted by the internal and external faculties. Rubrics for evaluation are as follows,*

Course Name :		**Course Code :**	
Student Name :		**Enrollment Number :**	
Seminar Batch Number, if any:		**Division :**	
Faculty Guide Name:		**Term :**	

Sr. No.	Week	Assessment Criteria	Performance Description (1-5)	Marks
1	According to the Examination Schedule	Content Knowledge and Understanding	**1: Poor:** Very limited knowledge; lacks understanding of key concepts.	
			2: Below Average: Basic knowledge with many gaps; some misunderstandings.	
			3: Average: Adequate knowledge; understands main ideas but lacks depth.	
			4: Good: Strong knowledge and clear understanding; minor gaps.	
			5: Excellent: Comprehensive knowledge with deep understanding and insight.	
2	According to the Examination Schedule	Originality and Innovative Approach	**1:** Lacks originality; follows existing ideas without new contributions.	
			2: Shows some original thoughts, but mostly relies on common approaches.	
			3: Demonstrates moderate originality with occasional novel ideas.	
			4: Frequently introduces new and creative ideas; innovative in approach.	
			5: Consistently highly original and innovative; a pioneer in new thinking and solutions.	
3	According to the Examination Schedule	Clarity of Problem Statement and Objectives	**1: Unclear:** Problem and objectives are vague, confusing, or missing key details.	
			2: Somewhat clear: Basic idea present, but lacks focus and precision; objectives not well defined.	
			3: Clear: Problem and objectives are understandable, but could be more specific or detailed.	
			4: Very clear: Well-defined problem and specific objectives that are easy to grasp.	
			5: Exceptionally clear: Problem statement and objectives are precise, concise, and fully detailed, guiding focused action.	

4	According to the Examination Schedule	Presentation and Communication Skills	**1-2: Poor:** Unclear, disorganised, and unengaging communication.	
			3-4: Below Average: Somewhat unclear, lacks confidence and structure.	
			5-6: Average: Clear but basic and somewhat unpolished.	
			7-8: Good: Clear, confident, well-structured, and engaging.	
			9-10: Excellent: Clear, engaging, confident, and polished delivery.	
5	According to the Examination Schedule	Response to Questions and Discussion	**1-2: Poor/Unsatisfactory:** Minimal effort, lacks relevance, few or no useful points.	
			3-4: Fair/Needs Improvement: Some effort, but lacks clarity, structure, or accuracy; relevant points are sparse.	
			5-6: Average/Meets Expectations: Adequate response, covers basic requirements, but lacks depth or insight.	
			7-8: Good/Exceeds Expectations: Clear, well-structured, mostly accurate, with relevant and insightful points.	
			9-10: Excellent/Outstanding: Thorough, highly relevant, and shows excellent insight, analysis, and engagement.	
			Total marks	

Note: The above rubric will be used as the summative assessment framework for evaluating individual student performance.

IX. SUGGESTED COS- POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)			
	PO1 - Basic and Discipline-Specific Knowledge	PO2- Problem analysis	PO3- Design/ Development of Solutions	PO-4 Engineering Tools, Experimentation and Testing	PO-5 Engineering Practices for Society, Sustainability, and Environment	PO-6 Project Management	PO-7 Lifelong Learning	PSO-1	PSO-2	PSO-3	PSO-4
CO1	3	--	--	--	--	--	2	3	--	--	2
CO2	3	3	2	2	--	--	3	2	--	--	2
CO3	2	2	3	3	--	2	2	--	--	--	3
CO4	--	--	2	2	--	3	2	2	--	--	3
CO5	2	2	2	2	--	2	2	2	--	--	3

X. TYPOGRAPHICAL GUIDELINES FOR SEMINAR REPORT WRITING:

After completion of the seminar work, each student is required to submit a seminar report. The seminar report must follow the structure and formatting guidelines given below.

A. STRUCTURE OF THE SEMINAR REPORT

The seminar report should include the following sections arranged in the given order:

1. **Cover Page – As per *Annexure I.***
2. **Title Page** – As per *Annexure I.*
3. **Certificate** – As per *Annexure II.*
4. **Acknowledgement** – A brief section in which the student may express gratitude to individuals and organisations who supported the project. As per *Annexure III*.
5. **Abstract** – A one-page summary outlining the objective of the project and the methodology adopted. As per *Annexure IV*.
6. **Table of Contents** – Prepared as per general guidelines. As per *Annexure V.*
7. **of purpose of the List of Figures** in a project report is to provide a clear and organised index of all visual representations used throughout the document. As per *Annexure VI*
8. **List of Tables -**The **purpose of the List of Tables** in a project report is to provide a structured overview of all tabular data included in the document. As per *Annexure VI*
9. **Seminar content:**
   - Divided into clearly defined chapters or sections.
   - Each section should cover specific aspects such as introduction, literature review, methodology, analysis, and discussion.
   - Include properly labelled figures, tables, graphs, and flowcharts where appropriate.
10. **Conclusion – Summarizes the key findings and takeaways from the seminar topic.**
11. **References –**
    - Begin two spaces below the heading "**REFERENCES**", aligned to the left.
    - Use **single spacing** within entries and list in **alphabetical order**.
    - References must be cited in the text using **square brackets [ ]**, numbered according to their first appearance.
    - Include author name(s), publication year, and other relevant details.

B. SEMINAR REPORT SPECIFICATIONS

1. **Binding**: Spiral (coil) binding.
2. **Cover Design:** Colour scheme as specified in Annexure 1
3. **Number of Copies**: Two, i.e. one per student and one departmental copy
4. **Paper Size: A4 (portrait orientation)**
5. **Margins**:
   - Top: 1 inch
   - Bottom: 1 inch
   - Right: 1 inch
   - Left: 1.5 inches
6. **Font Style**: Times New Roman

7. **Font Sizes**:
   - **Chapter Titles:** 16-point**, Bold, Uppercase**
   - **Headings:** 14-point, **Bold**
   - **Body Text:** 12-point, **Regular**
8. **Line Spacing**: 1.5 throughout the report
9. **Page Numbering**: Bottom centre in the format "Page X of N"

GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of the Government of Maharashtra)

DEPARTMENT OF METALLURGICAL ENGINEERING

SEMINAR REPORT

ON

"[TITLE OF THE SEMINAR IN CAPITAL LETTERS]"

Submitted By

Student name (enrollment no.)

UNDER THE GUIDANCE OF

[Guide's Full Name]

(Designation, e.g., Lecturer, Department of Metallurgical Engineering)

Submitted in Partial Fulfilment

of

The Requirements for the Award of the Diploma in

METALLURGICAL ENGINEERING

ACADEMIC YEAR: 20__–20___

GOVERNMENT POLYTECHNIC, PUNE, **Ganeshkhind Road, Shivajinagar, Pune – 411016**

Annexure-II

GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of the Government of Maharashtra)

DEPARTMENT OF METALLURGICAL ENGINEERING

CERTIFICATE

This is to certify that

Name of Student Enrollment Number

has completed the necessary seminar work and prepared the bonafide report on

"SEMINAR TITLE"

in a satisfactory manner as a partial fulfilment of the requirements for the

DIPLOMA IN

METALLURGICAL ENGINEERING

FOR THE ACADEMIC YEAR

20__- 20__

(Internal Guide) **(External Examiner)**

(H.O.D) **(Principal)**

Annexure-III

Acknowledgment

(Sample Format)

I take this opportunity to express my sincere gratitude to all those who have extended their support and guidance in the successful completion of this seminar.

I would like to convey my heartfelt thanks to my **Seminar Guide, Mr./Ms./Dr. [Name],** for his/her constant encouragement, valuable suggestions, and insightful guidance throughout the preparation and presentation of this seminar.

I express my sincere appreciation to **Mr./Dr. [Name], Head of Department**, for his/her motivation, academic support, and for providing the necessary facilities to conduct this seminar successfully.

I am also thankful to all the faculty members of the department for their cooperation and constructive feedback during the seminar sessions.

I extend my gratitude to the **Principal, Government Polytechnic, Pune**, for his/her continuous encouragement and for creating a learning environment conducive to professional development.

Last but not least, I thank all my classmates and friends for their support, suggestions, and participation, which made this seminar a truly enriching experience.

Student name (enrollment no.)

Annexure-IV

Abstract

The seminar titled "[Title of the Seminar]" focuses on [briefly state the main theme or objective, e.g., the study, design, application, or analysis of a specific concept or technology]. The purpose of this seminar is to provide an in-depth understanding of [mention key area or problem statement], highlighting its relevance in the present technological or industrial context.

This report discusses [mention key points — e.g., principles, working mechanisms, recent advancements, advantages, limitations, and future scope]. It aims to bridge the gap between theoretical knowledge and practical application through detailed exploration of [specific technologies, tools, or methodologies].

The seminar also emphasizes the significance of [mention any outcome, innovation, or benefit, such as sustainability, efficiency, automation, or safety] in the respective field. By reviewing various research findings and case studies, this seminar contributes to a comprehensive understanding of [topic area] and its potential future developments.

Annexure-V

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List of Tables

Name & Signature:

Shri. S.B. Kulkarni
Lecturer in Mechanical Engineering

Dr. N. G. Kulkarni
HoD in Mechanical Engineering

(Course Experts)

Name & Signature:

Shri. P.B. Kamble
(Programme Head)

Name & Signature:

Shri. S.B. Kulkarni
(CDC In-charge)

GOVERNMENT POLYTECHNIC, PUNE

'120- NEP' SCHEME

PROGRAMME	**DIPLOMA IN MT**
PROGRAMME CODE	**05**
COURSE TITLE	**INTERNSHIP**
COURSE CODE	**MT41209**
PREREQUISITE COURSE CODE & TITLE	**ACQUIRED A MINIMUM OF 60 CREDITS AND TERM GRANT FOR 80 CREDITS**
CLASS DECLARATION COURSE	**YES**

I. LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Course Type	Learning Scheme					Credits	Assessment Scheme											
			Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
														Practical						
			CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
										Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
MT41209	INTERNSHIP	INP	--	--	--	30	30	15	--	--	--	--	--	150@#	60	150#	60	--	--	300

Total IKS Hrs for Term: -- Hrs

Abbreviations: CL-Classroom Learning, **TL**-Tutorial Learning, **LL**-Laboratory Learning, **SLH**-Self Learning Hours, **NLH**-Notional Learning Hours, **FA** - Formative Assessment**, SA** -Summative Assessment, **IKS** - Indian Knowledge System, **SLA**- Self Learning Assessment.

Legends: @-Internal Assessment, **#** - External Assessment, ***#** - Online Examination, **@$** - Internal Online Examination, **@#**-Internal and External assessment for FA_PR

Note:

1. If a candidate is not securing the minimum passing marks in **FA-PR** (Formative Assessment - Practical) of any course, then the candidate shall be declared as **'Detained'** in that Course.
2. If a candidate does not secure the minimum passing marks in the SLA (Self Learning Assessment) of any course, then the candidate shall be declared as **'fail'** and will have to repeat and resubmit the SLA work.
3. **Notional learning hours** for the semester are **(CL + LL + TL + SL) hrs. * 24 Weeks**
4. **1 credit** is equivalent to **30 Notional hours**.
5. * Self-learning hours shall not be reflected in the Timetable.
6. * Self-learning includes micro-projects/assignments/other activities.

II. RATIONALE:

The internship course for diploma engineering students plays a vital role in their overall educational and professional development by effectively bridging the gap between academic learning and real-world application. It enables students to gain hands-on experience within authentic industrial settings, which sharpens their technical skills and reinforces their theoretical knowledge through practical engagement. This experiential learning is fundamental in preparing them to meet the challenges and expectations of the professional engineering environment.

Internship nurtures essential professional competencies, including problem-solving, effective communication, teamwork, and time management—skills that are critical for success in any engineering role. Moreover, it familiarises students with current industry standards, workplace ethics, safety regulations, and organisational culture, fostering a strong sense of responsibility and professionalism.

The internship experience also provides students with the opportunity to explore diverse engineering domains, helping them clarify their interests and career inclinations. Additionally, it offers valuable networking prospects with industry professionals and mentors, which often lead to career guidance, job opportunities, and enhanced employability.

From an academic perspective, internships align with the National Education Policy (NEP)'s emphasis on experiential, skill-based, and holistic learning. They integrate practical training within the curriculum, ensuring students graduate as competent engineers equipped with both conceptual understanding and industry exposure.

III. INDUSTRY EXPECTED OUTCOME

This course is designed to enable students to develop the industry-relevant competency of:

The internship course equips students to apply their technical knowledge and professional skills in real-world work environments. It emphasizes the importance of effective resource management, adherence to safety protocols, clear communication, problem-solving skills, and thorough documentation. These elements collectively enhance employability and prepare students for engineering roles.

IV. COURSE-LEVEL LEARNING OUTCOMES (COs)

Students will be able to achieve & demonstrate the following COs on completion of the course-based learning.

CO1: *Apply* engineering concepts and industry practices to *solve* real-world technical problems.

CO2: *Demonstrate* professional behaviour by *adhering* to safety standards, ethical practices, and effective time and resource management.

CO3: *Prepare* and *present* technical information clearly through well-structured reports, presentations, and documentation.

CO4: *Engage* effectively in team activities to *analyse* workplace challenges and *develop* innovative engineering solutions.

V. GENERAL GUIDELINES FOR ORGANIZING 24-WEEK INTERNSHIP

i) Internship Selection Criteria, Duration, and Industry Domain Guidelines:

- **Selection of Industry/Organization:**
  Industries or organisations selected for internships shall preferably include Government Departments, Public Sector Undertakings, Public Limited Companies, and Start-ups. Centres of Excellence, Skill Development Centres, or Skill Parks that offer meaningful exposure aligned with the engineering curriculum.
- **Duration of Internship:**
  The internship shall be of 24 weeks' duration, providing students with sufficient practical experience and sustained industry engagement.

- **Internship Period:**
  The internship will be conducted during the sixth semester as an integral part of the academic curriculum, enabling students to gain full-time, hands-on industrial learning and skill development.
- **Industry Domain:**
  The selected industries should belong to the core or allied sectors relevant to the respective engineering programs, including large, medium, or small-scale industries, as well as Government, Semi-Government or recognized private organisations.

ii) Role and responsibilities of the Training and Placement Cell (TPO):

a) Internship Coordination:
- All activities related to the internship shall be managed and supervised by the Training and Placement Officer (TPO), with support from department-level coordinators to ensure smooth coordination and effective execution of the internship process.

b) Student Orientation:
- Identify appropriate topics and organize expert sessions on soft skills, workplace safety, and internship guidelines to prepare students for effective participation in industrial training.

c) Monitoring and Support:
- Monitor student progress through regular reviews, coordinate faculty visits or online interactions, and address any issues encountered during the internship period.

d) Feedback and Improvement:
- Collect feedback from industries and students, conduct review meetings, and implement necessary measures to enhance the quality of future internship programs.

e) Reporting and Compliance:
- Prepare and submit periodic reports to the Principal, MSBTE, and DTE, as and when required, while ensuring compliance with all prescribed norms, formats, and timelines.

iii) Roles and Responsibilities of Program Head of Departments (PHODs):

a) Planning and Implementation:
- Oversee the implementation of the internship program within the department as per guidelines.
- Nominate a Departmental Internship Coordinator and Faculty mentors for effective monitoring.

b) Industry Identification:
- Identify suitable industries and organisations relevant to the program specialization.
- Assist the T&P Cell in establishing linkages and finalising internship opportunities for students.

c) Student Allotment and Approval:
- Approve student internship proposals and ensure alignment with curriculum objectives.
- Verify consent letters, project details, and industry mentors before approval.

d) Monitoring and Evaluation:

- Ensure regular monitoring of students by assigned Faculty mentors. Review progress reports and coordinate internal evaluations, presentations, and viva- voce.

e) Documentation and Record Maintenance:

- Maintain departmental records of internship allocations, student attendance, progress reports, and evaluations.
- Submit summary reports to the Training and Placement Cell for consolidation and institutional reporting.

f) Feedback and Quality Improvement:

- Collect feedback from students, faculty mentors, and industry mentors to identify gaps.
- Recommend improvements for the next internship cycle and share best practices.

g) Compliance and Reporting:

- Ensure that all departmental internship activities comply with institutional, MSBTE, and DTE guidelines.
- Submit required reports and documentation to the Principal and T&P Cell on time.

iv) Roles and Responsibilities of Institute Mentors:

b) Guidance and Supervision:

- Assist students in selecting suitable industries, defining clear internship objectives, and understanding expected outcomes.
- Provide continuous academic and technical support throughout the internship duration.

c) Monitoring Progress:

- Maintain regular communication with students and industry mentors through visits, phone calls, or online meetings.
- Review and assess weekly or biweekly progress reports submitted by the students.

d) Evaluation of Performance:

- Assess students' work based on attendance, learning outcomes, technical contribution, and professional behaviour.
- Conduct interim and final evaluations, including report assessment, seminar, and viva- voce.

e) Documentation:

- Verify and endorse internship daily diary, monthly progress sheets, and final reports.
- Submit mentor evaluation records and feedback to the Departmental Internship Coordinator.

f) Support and Problem-Solving:

- Address any academic or behavioral challenges faced by students in collaboration with industry mentors and departmental coordinators.

g) Feedback and Improvement:

- Provide constructive feedback to students to enhance their skills and professional growth.
- Recommend improvements to the department and Training & Placement Cell to strengthen future internship programs.

v) Roles and Responsibilities of the Industry / Organization:

a) Intern Selection and Induction:

- Review and approve internship applications submitted by students or through the institute.
- Conduct a written test or interview, either within the institute or at the industry site, to assess and select suitable candidates.
- Provide an orientation or induction program to familiarize selected students with the organization's structure, policies, safety rules, and work culture.

b) Work Allocation:

- Assign specific tasks, projects, or activities related to the student's field of study.
- Ensure tasks provide practical learning and match the internship goals.

c) Supervision and Mentoring:

- Appoint industry mentors to guide and oversee students' daily work.
- Provide regular feedback and technical support to help develop skills.

d) Monitoring and Attendance:

- Keep attendance records and ensure students follow discipline, punctuality, and safety norms.
- Report any student performance or conduct problems to the institute.

e) Evaluation and Feedback:

- Periodically assess students' progress and submit Monthly Internship Performance Evaluation reports to the Institute mentor.
- Give constructive feedback on students' skills, behavior, and performance for academic grading.

f) Certification:

Issue completion certificates at the end of the internship, noting duration, project details, and performance.

g) Collaboration with the Institute:

- Communicate regularly with the Institute Mentor/Coordinator regarding student progress.
- Support institute visits, reviews, and evaluation processes as part of the internship assessment.

h) Safety and Conduct:

- Ensure a safe workplace and enforce compliance with safety regulations.
- Promote professional behavior, teamwork, and ethics among students.

VI. GUIDELINE FOR STUDENTS:

a) Eligibility Criteria:

- Students must have acquired at least 60 credits AND obtained a term grant for courses totaling 80 credits up to the fifth semester before starting the internship.
- Each student must obtain prior approval from the Department before joining the internship.

b) Submission of Undertaking by Students and Parents:

- Before commencing the internship, each student must submit an undertaking form, duly signed by both the student and parent/guardian, as specified in Annexure I.
- The duly signed undertaking must be submitted to the Department Internship Coordinator before the commencement of the internship.

c) Professional Conduct:

- Maintain discipline, punctuality, and professionalism during the internship.
- Follow all rules, policies, and ethical standards of the host organisation.
- Demonstrate respect, teamwork, initiative, and responsibility in all assigned tasks.
- Represent the Government Polytechnic, Pune, with integrity and professionalism.

d) Dress Code and Safety Guidelines:

- Follow the prescribed dress code of the institute or industry; maintain a neat, formal, and professional appearance.
- In workshops, plants, or industrial sites, wear Personal Protective Equipment (PPE) such as helmets, safety shoes, gloves, and goggles.
- Adhere to all safety regulations, avoid unsafe practices, and report any accident or hazard immediately to the supervisor.

e) Attendance, Working Hours. And Leave Policy:

- Students must follow the working hours set by the industry or organisation.
- They are expected to stay fully engaged during the entire internship period.
- If absence is unavoidable due to valid medical or personal reasons, students must notify and get prior approval from both the Industry mentor and the Institute Mentor
- All approved absences must be documented in the internship logbook with proper supporting documents.
- Unapproved or excessive absences may result in detention in the internship course, and the student must re-register for the course according to the institutional policies.

f) Confidentiality and Ethical Conduct:

- Maintain the confidentiality of all data, designs, processes, and documents of the organisation.
- Do not share or publish any organisational information, photographs, or reports without written consent.

g) Learning and Participation:

- Take an active role in all assigned tasks and training sessions.
- Show curiosity, initiative, and a willingness to learn new technical and interpersonal skills.
- Participate in discussions, presentations, and on-site activities as directed.

h) Reporting and Documentation:

- Maintain a daily logbook or diary of activities, observations, and learning outcomes.
- Submit periodic progress reports to the institute mentor as per the schedule.
- Keep attendance and leave records properly documented in the logbook.

i) Communication and Coordination

- Maintain regular communication with the Industry mentor and Institute Mentor for guidance and feedback.
- Report promptly any challenges, schedule changes, or issues faced during the internship.

j) Post-Internship Requirements

- After completing the internship, students must submit the following to the department within the prescribed timeline:
- Internship Completion Certificate issued by the host industry.
- Internship Report (in the prescribed format).
- Daily Diary, duly verified and signed by the industry supervisor.
- Student Feedback Form on the internship experience.
- Attend the post-internship presentation, seminar, and viva-voce for final evaluation.

VII. DETAILED WEEKWISE TIMELINE FOR THE COURSE IMPLEMENTATION STAGES:

Phase	Week(s)	Objective / Activities	Expected Outcome
Phase 1: Pre-Internship Orientation (At the Institute	**Week 1**	Conduct a comprehensive orientation to acquaint students with internship objectives, evaluation methods, mentor roles, code of conduct, and safety norms, complemented by soft skills training to enhance communication, teamwork, and professional readiness for industry.	Students understand the internship framework, evaluation process, and professional expectations, and develop communication and teamwork skills for effective industry participation.
Phase 2: Industrial Induction and Familiarization (At the Industry)	**Week 2**	Participate in the company induction to understand the organisational structure, departments, and key products or services.	Students gain a clear understanding of the company's structure, functions, and operations.
	Week 3	Observe ongoing projects, operational procedures, safety practices, and workplace culture.	Students become familiar with workplace culture, safety norms, and standard procedures.
	Week 4	Students will identify key learning areas, tools, and techniques for assigned tasks and outlined their understanding and learning objectives.	By the end of this phase, students can identify relevant learning areas, tools, and techniques, and define them individual learning objectives aligned with organisational activities.
Phase 3A: Core Project Implementation (At the Industry under Joint Supervision of Industry and Faculty Mentor)	**Weeks 5-6**	Undertake hands-on implementation of the assigned project under the joint supervision of the Industry and Faculty mentor.	Students gain practical experience by applying engineering, management, or technical concepts to real-world projects.
	Weeks 7-8	Carry out assigned activities such as data collection, process study, and initial implementation, with regular submission of weekly progress reports.	Students will develop problem-solving, analytical, and project management skills through practical work, data analysis, and process improvement.
	Weeks 9-10	Apply relevant engineering, management, or technical concepts during project execution under industry mentor supervision.	Students enhance their ability to document, evaluate, and refine project activities effectively through regular reporting and mentor feedback.
Phase 3B: Formative Assessment of Online Courses Undertaken Concurrently with the Internship (At the Institute)	**Week 11**	Conduct a formative assessment for online courses such as Management and Entrepreneurship Development.	Students receive feedback to enhance their understanding and application of Management and Entrepreneurship concepts.

Phase 3C: Core Project Implementation (At the Industry under Joint Supervision of Industry and Faculty Mentor)	**Weeks 12-13**	Conduct mid-term presentations and feedback sessions to evaluate progress and refine objectives, scope, or methodologies as needed.	Students refine their project based on feedback.
	Weeks 14-15	Continue with project execution, documentation, and analysis of findings.	Significant progress in project work and professional development.
	Weeks 16-17	Testing, validation, and preparation of a draft report summarizing key outcomes.	Demonstrate the ability to validate results and present findings effectively.
Phase 4: Report Preparation and Documentation (At the Industry	**Weeks 18-19**	Compile and analyze final results and data, and prepare the Internship Report following institutional guidelines.	Students prepare a structured draft report for review.
	Week 20-21	Submit the draft report to the Industry and institute mentors for review and feedback, then incorporate revisions.	Improve its quality based on mentor feedback.
	Week 22	Incorporate revisions to finalize the report in accordance with institutional and industry standards.	Finalize the internship report for submission as per the required standards.
Phase 5: Preliminary Evaluation & Review Presentation (At the Industry under Joint Supervision of Industry and Faculty Mentor)	**Week 23**	Conduct a preliminary evaluation of the internship work through presentations and reviews under the joint supervision of industry and the Faculty mentor.	Students demonstrate technical knowledge, problem-solving skills, and professional competence through effective project presentation.
Phase 6: Final Evaluation & Project Presentation (At the Institute as per Examination Schedule)	**Week 24**	Conduct the final viva-voce examination and evaluate students' overall performance.	Students complete the internship, achieving a comprehensive evaluation of their technical knowledge, professional skills, and overall performance.

VIII. CRITERIA FOR ASSESSMENT/EVALUATION OF INTERNSHIP

A. Formative Assessment (FA) Criteria

In the sixth-semester Internship course, students will be evaluated for the Formative Assessment (FA_PR) out of 100 marks every month. The monthly scores will be averaged over six months and scaled to a total of 150 marks according to the following criteria:

a) Monthly Internship Performance Evaluation by Industry Mentor

Intern Name		**Enrollment No.**	
Internship Organization		**Industry Mentor**	
Month / Period		**Evaluation Date**	

Scoring Key:

1 - Needs Improvement | 2 - Fair | 3 - Satisfactory | 4 - Good | 5 - Excellent

Sr. No.	Parameters / Behaviours	Score (1-5)	Comments / Observations
1	**Work Reliability & Responsibility:** Follows instructions, completes tasks on time, performs duties reliably, organises and prioritizes work, and plans responsibilities effectively.		
2	**Teamwork & Cooperation:** Participates in group tasks, collaborates respectfully with team members, contributes ideas, and supports co-workers and supervisors.		
3	**Interest & Enthusiasm for Work:** Shows curiosity, asks questions, explores new tasks, engages actively, and demonstrates eagerness to learn.		
4	**Learning Ability & Adaptability:** Understands and applies new concepts quickly, adapts to changes, modifies approach when needed, and improves performance with new learning.		
5	**Initiative & Creativity:** Takes initiative without being told, generates new ideas, proposes solutions, designs creative approaches, and develops better methods.		
6	**Quality of Work:** Executes tasks accurately, reviews and refines work, applies standards, and produces clear, complete, and reliable outputs.		
7	**Response to Feedback:** Listens to feedback, reflects on suggestions, revises work accordingly, improves performance, and adjusts behaviour when needed.		
8	**Communication Skills:** Explains ideas clearly, describes processes logically, presents information confidently, documents work professionally, and expresses thoughts effectively.		

9	**Time & Task Management:** Plans tasks, schedules activities, organises workload efficiently, monitors progress, and consistently meets deadlines.		
10	**Professionalism:** Demonstrates ethical behaviour, complies with rules, maintains proper appearance, exhibits a positive attitude, and models professional standards.		
	Total		

i) **Total Score: _____ / 50**

ii) Overall Performance for the Month (circle one):

Needs Improvement / Fair / Satisfactory / Good / Excellent

Additional Comments / Feedback:

Signature of Industry Mentor: _____

Date: _____

Signature of Intern: _____

Note: The Total **Formative Assessment (FA_PR) Marks** for the individual student.

b) Monthly Internship Performance Evaluation by Faculty Mentor

Scoring Key:

1 - Needs Improvement | 2 - Fair | 3 - Satisfactory | 4 - Good | 5 - Excellent

Sr. No.	Parameters / Behaviours	Score (1-5)	Comments / Observations
1	**Quality & Consistency of Weekly Reports** - Reports are timely, structured, and reflective of actual work done.		
2	**Completeness of Internship Logbook / Evidence** - Maintains proper documentation, proofs, and daily entries.		
3	**Application of Knowledge** - Applies classroom learning to assigned industry tasks.		
4	**Problem-Solving & Analytical Ability** - Investigates issues logically and provides workable solutions.		
5	**Use of Tools / Software / Equipment** - Uses relevant technical tools or software appropriately.		
6	**Technical Understanding** - Demonstrates understanding of processes, machines, or systems involved in work.		
7	**Quality of Final Presentation / Review** - Presents work confidently with clarity during review.		
8	**Quality of Final Internship Report** - Report is structured, accurate, and professionally written.		
9	**Professional Behaviour & Punctuality** - Shows discipline, timeliness, and responsible behaviour.		
10	**Overall Learning Progress** - Shows clear growth in knowledge, skills, and attitude during internship.		
	Total		

Total Score: _____ / 50

Signature of Faculty Mentor: _____

Date: _____

Signature of Intern: _____

Note: The Total **Formative Assessment (FA_PR) Marks** for the individual student.

c) Final Formative Assessment (FA_PR) Internship Evaluation Sheet (For 6 months)

The **Monthly Formative Assessment (FA_PR)** will be conducted out of **100 marks** based on the student's internship performance, as evaluated by the **Industry Mentor** using the given criteria. The **average of monthly evaluations over six months** will be **scaled proportionately to a total of 150 marks** for the final assessment of the internship performance.

i. Student & Internship Details

Intern Name		**Enrollment No**	
Name of the Program		**Term**	
Internship Organization		**Industry Mentor Name & Designation**	
Internship Duration	**24 weeks, i.e. 6 Months**	**Total Marks (FA_PR)**	**150**

ii. Monthly Performance Evaluation (Out of 100 Marks Each Month)

Month	Industry Mentor Score (out of 50)	Faculty Mentor Score (out of 50)	Marks Obtained (Out of 100)
Month 1			
Month 2			
Month 3			
Month 4			
Month 5			
Month 6			
Total of Monthly Scores (Sum of all six monthly evaluations)			
Average Monthly Score (Total of Monthly Scores) ÷ 6)			
Maximum marks (Average Monthly Score ÷ 100) × 150)			

Date: **Name and Signature of Faculty Mentor**

B. Summative Assessment for Internship (Maximum Marks: 150)

The summative evaluation of students at the end of the internship shall be carried out based on the following parameters. The assessment will reflect the student's overall performance, quality of learning, and professional development during the internship period.

i) Student & Internship Details

Intern Name		**Enrollment No.**	
Internship Organization		**Industry Mentor**	
Month / Period		**Evaluation Date**	
Faculty mentor Name:		**Term :**	

ii) Performance Evaluation:

Sr. No.	Assessment Criteria	Marks out of 25
1	**Presentation Quality & Delivery:** Clarity of explanation, well-organized content, confident speaking, and effective communication of internship outcomes.	
2	**Knowledge & Technical Skills:** Understanding of concepts, correct and clear responses, ability to explain work done, and demonstration of technical or analytical skills.	
3	**Learning Experience & Exposure:** Variety and relevance of tasks performed, practical exposure to tools, technologies, and real workplace processes.	
4	**Application of Theory to Practice:** Ability to apply classroom knowledge to real problems, solve practical issues, and relate academic learning to actual work.	
5	**Internship Report Quality:** Well-structured writing, clarity, correct documentation, reflective content, and adherence to academic guidelines.	
6	**Attendance, Logbook & Professional Conduct:** Regular attendance, disciplined behaviour, properly maintained logbook, and positive evaluation from industry supervisor.	
	Total (out of 150)	

Note: The above rubric will be used as the summative assessment framework for evaluating individual student performance.

Signature of Industry Mentor: _____Signature of Faculty Mentor: _____

IX. SUGGESTED COS- POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)			
	PO1 - Basic and Discipline-Specific Knowledge	PO2- Problem analysis	PO3- Design/ Development of Solutions	PO-4 Engineering Tools, Experimentation and Testing	PO-5 Engineering Practices for Society, Sustainability, and Environment	PO-6 Project Management	PO-7 Lifelong Learning	PSO-1	PSO-2	PSO-3	PSO-4
CO1	2	2	--	--	2	2	2	3	--	--	2
CO2	2	3	2	2	--	3	2	--	2	--	3
CO3	3	3	3	3	2	2	2	3	2	2	3
CO4	--	--	--	--	3	2	2	--	--	--	3

X. TYPOGRAPHICAL GUIDELINES FOR INTERNSHIP REPORT WRITING:

After completion of the internship, each student is required to submit an internship report. The report must follow the structure and formatting guidelines given below.

A. STRUCTURE OF THE INTERNSHIP REPORT

The internship report should include the following sections arranged in the given order:

1. **Cover Page -** As per **Annexure IV.**
2. **Title Page** - As per **Annexure IV.**
3. **Certificate** - As per **Annexure V**.
4. **Acknowledgement** - A brief section in which the student may express gratitude to individuals and organisations who supported the project. As per **Annexure VI.**
5. **Abstract** - A one-page summary outlining the objective of the project and the methodology adopted. ***As per*** **Annexure VII.**
6. **Table of Contents** - Prepared as per general guidelines. As per **Annexure VIII.**
7. **The list of Figures** in a project report is to provide a clear and organised index of all visual representations used throughout the document. As per **Annexure IX**.
8. **List of Tables -**The **purpose of the List of Tables** in a project report is to provide a structured overview of all tabular data included in the document. As per **Annexure IX**.
9. **Internship content:**
   - Divided into clearly defined chapters or sections.
   - Each section should cover specific aspects such as introduction, literature review, methodology, analysis, and discussion.
   - Include properly labelled figures, tables, graphs, and flowcharts where appropriate.
10. **Conclusion - Summarises the key findings and takeaways from the internship.**
11. **References -**
    - Begin two spaces below the heading "**REFERENCES**", aligned to the left.

- Use **single spacing** within entries and list in **alphabetical order**.
- References must be cited in the text using **square brackets [ ]**, numbered according to their first appearance.
- Include author name(s), publication year, and other relevant details.

B. INTERNSHIP REPORT SPECIFICATIONS

1. **Binding**: Spiral (coil) binding.
2. **Cover Design:** Colour scheme as specified in **Annexure I**
3. **Number of Copies**: Two, i.e. one per student and one departmental copy
4. **Paper Size: A4 (portrait orientation)**
5. **Margins**:
   - Top: 1 inch
   - Bottom: 1 inch
   - Right: 1 inch
   - Left: 1.5 inches
6. **Font Style**: Times New Roman
7. **Font Sizes**:
   - **Chapter Titles:** 16-point**, Bold, Uppercase**
   - **Headings:** 14-point, **Bold**
   - **Body Text:** 12-point, **Regular**
8. **Line Spacing**: 1.5 throughout the report
9. **Page Numbering**: Bottom centre in the format "Page X of N"

Annexure-I

Relieving Letter for Students

<Institute Letterhead>

No. /GPP/Internship/Relieving letter / **Date:**

To,
The HR Manager / Training Head,
[Name of Industry/Organisation]
[Address]

Subject: *Relieving of Students for Internship*

Dear Sir/Madam,

This is to certify that the following students from **Government Polytechnic, Pune**, are hereby relieved from the institute to undergo **internship training** at your esteemed organisation as part of their academic curriculum.

Sr. No.	Enrollment No.	Name of Student	Program
1			
2			
3			
4			
5			

The students are expected to adhere to your organization's rules and regulations during the internship and will report back to the institute upon completion of their internship period.

We sincerely thank you for providing them with the opportunity for practical exposure and skill development.

Principal
Government Polytechnic, Pune

Annexure-II
Weekly Internship Diary

Student Name		**Enrollment No.**	
Name of Industry / Organisation		**Department / Section**	
Week No.		**Duration**	From _____To _____
Industry Mentor		**Faculty Mentor**	

j) Summary of Weekly Activities

Day	Date	Tasks / Activities Performed	Tools, Equipment, or Software Used	Learning / Observations / Outcomes
Monday	DD/MM/YYYY			
Tuesday	DD/MM/YYYY			
Wednesday	DD/MM/YYYY			
Thursday	DD/MM/YYYY			
Friday	DD/MM/YYYY			
Saturday	DD/MM/YYYY			

2. Work Description (in Brief)

Summarises the key activities carried out during the week:

_____

_____

_____

_____

3. Skills and Knowledge Gained

List the technical and professional skills developed during this week:

4. Challenges Faced and Solutions Implemented

Describe any problems encountered and how they were resolved:

5. Remarks / Feedback

Industry Mentor's Remarks:

Name and Signature of Student:

Date:

Industry Mentor: Name, Signature

Annexure-III

Internship Attendance Sheet

Name of the Student		**Enrollment Number**	
Date of Commencement of Internship		**Date of Completion of Internship**	
Industry Mentor		**Faculty Mentor**	

Weekly Attendance Record

Week No.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Instructions:

- Keep this sheet attached to the Daily Training Diary.
- Mark **'P'** for present days, Mark **'H'** in **red ink** for holidays. Mark **'A'** in **red ink** for absent days.

Industry Mentor: Name, Signature, and Date

Annexure-IV

GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of the Government of Maharashtra)

DEPARTMENT OF _____

INTERNSHIP REPORT

ON

"INTERNSHIP AT [NAME OF INDUSTRY / ORGANIZATION]"

Submitted By

Student name (enrollment no.)

UNDER THE MENTORSHIP OF

Faculty Mentor: _____

Industry Mentor: _____

Submitted in Partial Fulfilment

of

The Requirements for the Award of the Diploma in

METALLURGICAL ENGINEERING

ACADEMIC YEAR: 20__-20___

***GOVERNMENT POLYTECHNIC, PUNE,* Ganeshkhind Road, Shivajinagar, Pune - 411016**

Annexure-V

GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of the Government of Maharashtra)

DEPARTMENT OF _____

CERTIFICATE

This is to certify that **Mr./Ms. [Student Name]**, Enrollment No. **[XXXXX]**, of **[Program Name]**, has completed the **24-week internship** at **[Name of Industry/Organisation]** from **[Start Date] to [End Date]** as part of the sixth semester curriculum under the supervision of **[Industry Mentor Name]**.

His/her performance and conduct during the internship were deemed satisfactory.

Industry Mentor
Signature:

Name:

Designation:

Faculty Mentor
Signature:

Name:

Designation:

Head of Department
Signature:

Name:

Annexure-VI

Acknowledgement

(Sample Format)

I want to express my sincere gratitude to all those who have contributed to the successful completion of my internship.

I am deeply thankful to my **Industry Mentor and** the staff of the organisation for their constant guidance, valuable feedback, and generous support throughout my training period. Their practical insights and encouragement have significantly enhanced my technical knowledge and professional skills.

I would like to extend my heartfelt appreciation to my **Faculty Mentor** and the faculty members of the Department for their continuous academic support, motivation, and valuable suggestions during the internship. Their consistent guidance helped me bridge theoretical learning with industrial practices.

My sincere thanks to **Mr./Dr. [Full Name], Head of Department**, for his/her guidance, encouragement, and support in facilitating this internship as an integral part of our curriculum.

I am also grateful to the **Training and Placement Officer** for coordinating the internship process effectively and ensuring a smooth interaction between the institute and the organisation.

Finally, I extend my deep gratitude to the **Principal, Government Polytechnic, Pune**, for providing the opportunity and institutional support to undertake this internship, which has been an enriching learning experience.

Student name
Enrollment no.

Annexure-VII

Abstract

(Sample Format)

This report presents a detailed account of the internship undertaken at [Name of the Industry/Organisation] as part of the curriculum requirement of Government Polytechnic, Pune. The internship was carried out for a duration of [number of weeks] weeks, during which I gained practical exposure to industrial operations, processes, and professional practices relevant to my field of study.

The primary objective of the internship was to bridge the gap between theoretical knowledge and real-world applications. During the training period, I was involved in [briefly mention key tasks or areas of work - e.g., project work, production process, quality testing, maintenance, software development, etc.], which helped me understand the practical aspects of [mention core subject or domain - e.g., mechanical systems, automation, data analysis, etc.].

This report highlights the organisational structure, work environment, roles and responsibilities assigned, and the skills acquired during the internship. It also includes observations, key learnings, and suggestions for further improvement.

Overall, the internship provided valuable professional experience, enhanced my technical and interpersonal skills, and strengthened my readiness for future industrial and professional challenges.

Annexure-VIII

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Student Internship Feedback Form

(To be filled by the student after completion of the 24-week internship)

Enrollment Number		**Student Name**	
Program		**Name of Industry / Organisation**	
Industry mentor		**Designation**	
Internship Type	☐ Paid ☐ Unpaid	**Industry Mentor Email / Contact No.**	
Faculty Mentor (Institute)		**Internship Duration**	From _____To _____

1. Brief Description of Internship Work

(Provide a summary of your work — title, department/section, and key responsibilities or tasks performed.)

_____

_____

_____

_____

_____

2. Relevance to Field of Study

Was your internship experience related to your area of study? (Please tick ✓ the appropriate box)

☐ Yes, to a large extent ☐ Yes, to some extent ☐ No, not related

3. Evaluation of Internship Experience (Please tick ✓ the appropriate box)

Internship provides …	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
Given me an opportunity to explore a career field	☐	☐	☐	☐	☐
Allowed me to apply classroom learning to practice	☐	☐	☐	☐	☐
Helped me develop decision-making and problem-solving skills	☐	☐	☐	☐	☐
Enhanced my understanding of professional work culture	☐	☐	☐	☐	☐
Improved my written and oral communication skills	☐	☐	☐	☐	☐
Provided an opportunity to use leadership and teamwork skills	☐	☐	☐	☐	☐
Increased my awareness of ethical and professional responsibilities	☐	☐	☐	☐	☐
Boosted my confidence in handling new situations	☐	☐	☐	☐	☐
Helped me improve my interpersonal and time management skills	☐	☐	☐	☐	☐
Helped me discover new interests and abilities	☐	☐	☐	☐	☐
Helped me clarify my career goals	☐	☐	☐	☐	☐
Provided access to tools, equipment, or software not available at the institute	☐	☐	☐	☐	☐
Provided industry exposure and contacts useful for future employment	☐	☐	☐	☐	☐

4. Faculty Mentorship

Do you feel your faculty mentor guided and supported you effectively?

☐ Yes ☐ To some extent ☐ No

If yes, please specify how:

5. Areas of Growth

In which areas did you experience the most personal or professional development?

6. Most Significant Experience

What was the most satisfying or meaningful achievement during your internship?

7. Challenges Faced

What aspects of the internship did you find least satisfying or most challenging?

8. Overall Rating

How would you rate your overall internship experience?

☐ Satisfactory ☐ Good ☐ Excellent

_____

_____

_____

_____

9. Suggestions for Improvement

Please share your suggestions for improving the internship experience (e.g., need for more guidance, industry visits, better orientation, or additional training).

_____

_____

_____

_____

_____

Date: **Name and Signature of student**

Name & Signature: **Shri. S.B. Kulkarni** Lecturer in Mechanical Engineering, **Dr. N. G. Kulkarni** HoD in Mechanical Engineering **(Course Experts)**	
Name & Signature: **Shri. P.B. Kamble** (Programme Head)	**Name & Signature:** **Shri. S.B. Kulkarni** (CDC In-charge)