

**GOVT. POLYTECHNIC MAYURBHANJ**

**LESSON PLAN OF MECHANICAL METALLURGY ACADEMIC YEAR (2025-26) SUMMER**

Discipline: **Metallurgy Engineering**

Semester: **6<sup>th</sup> semester**

Name of the Teaching Faculty: **SUBRAT KUMAR BEHERA**

Subject: **Mechanical metallurgy**  
Sub code: **Th.2**

No of days /week class allotted:**04**

Semester from Date:**22/12/2025 to 18/04/2026**

Mo nth	Week	Day	Unit	Topics		
December	4 <sup>th</sup>	1 <sup>st</sup>	UNIT-1	Introduction		
		3 <sup>rd</sup>		Dislocation, types, its basic behavior & role in deformation		
		6 <sup>th</sup>		Dislocation in various crystals		
		7 <sup>th</sup>		<b>4<sup>th</sup> SATURDAY HOLIDAY</b>		
	5 <sup>th</sup>	1 <sup>st</sup>		Source of dislocation		
		3 <sup>rd</sup>		Twinning & deformation, Slip & Deformation		
	January	1 <sup>st</sup>		6 <sup>th</sup>	UNIT-2	Explain the elastic & plastic behavior of metals
				7 <sup>th</sup>		Explain yielding criteria.
2 <sup>nd</sup>		1 <sup>st</sup>	Derive critically resolved shear stress			
		3 <sup>rd</sup>	Explain deformation of polycrystalline aggregates			
		6 <sup>th</sup>	<b>REVISION</b>			
		7 <sup>th</sup>	<b>2<sup>nd</sup> SATURDAY HOLIDAY</b>			
3 <sup>rd</sup>		1 <sup>st</sup>	UNIT-3	Explain strengthening mechanism		
		3 <sup>rd</sup>		<b>MAKAR SANKRANTI HOLIDAY</b>		
		6 <sup>th</sup>		Describe the role of grain boundary in strengthening, Define Hall Petch equation		
		7 <sup>th</sup>		Describe yield point phenomenon, Explain strain-aging		
		4 <sup>th</sup>		1 <sup>st</sup>	Explain solid solution strengthening from fine particles	
				3 <sup>rd</sup>	Describe fiber strengthening, Describe martensitic strengthening	
				6 <sup>th</sup>	<b>BASANTA PANCHAMI HOLIDAY</b>	
				7 <sup>th</sup>	<b>4<sup>th</sup> SATURDAY HOLIDAY</b>	
5 <sup>th</sup>			1 <sup>st</sup>	<b>REPUBLIC DAY</b>		
		3 <sup>rd</sup>	Explain strain hardening			

		6 <sup>th</sup>		<b>1<sup>st</sup> Monthly Test</b>
		7 <sup>th</sup>		Describe Bauschinger's effect
February	1 <sup>st</sup>	1 <sup>st</sup>		Classify different metal working process.
		3 <sup>rd</sup>		Explain hot working and cold working of metals and alloys
		6 <sup>th</sup>		State the advantages and disadvantages of hot and cold working
		7 <sup>th</sup>		Recovery, recrystallization and grain growth
				Class test 1
	2 <sup>nd</sup>	1 <sup>st</sup>		Recovery, recrystallization and grain growth
		3 <sup>rd</sup>		Recovery, recrystallization and grain growth
		6 <sup>th</sup>		<b>2ND SATURDAY HOLIDAY</b>
		7 <sup>th</sup>		
	3 <sup>rd</sup>	1 <sup>st</sup>	UNIT-4&5	Explain principles of rolling
		3 <sup>rd</sup>		Compare between hot rolling and cold rolling
		6 <sup>th</sup>		<b>1<sup>st</sup> Internal Assessment</b>
		7 <sup>th</sup>		Explain the types of roll pass-open pass and box pass
	4 <sup>th</sup>	1 <sup>st</sup>	UNIT-6	Explain the types of roll pass-open pass and box pass
3 <sup>rd</sup>		State different types of rolling defects and their control		
6 <sup>th</sup>		State different types of rolling defects and their control		
7 <sup>th</sup>		<b>4TH SATURDAY HOLIDAY</b>		
March	1 <sup>st</sup>	1 <sup>st</sup>	UNIT-7	<b>REVISION</b>
		3 <sup>rd</sup>		<b>HOLI</b>
		6 <sup>th</sup>		Explain types of forging process
		7 <sup>th</sup>		Describe the properties of forged products
	2 <sup>nd</sup>	1 <sup>st</sup>	UNIT-8	<b>Doubt clearing Class</b>
		3 <sup>rd</sup>		Explain the defects of forged products and their control
		6 <sup>th</sup>		Explain the elementary principle of extrusion
		7 <sup>th</sup>		<b>2ND SATURDAY HOLIDAY</b>
	3 <sup>rd</sup>	1 <sup>st</sup>	UNIT-9	Classify the defects in extruded product
		3 <sup>rd</sup>		Explain the manufacturing of seamless pipes
		6 <sup>th</sup>		Explain the elementary principle of wire drawing
		7 <sup>th</sup>		<b>ID-UL-FITRE</b>
	4 <sup>th</sup>	1 <sup>st</sup>		Classify the defects of wire drawing
		3 <sup>rd</sup>		<b>2<sup>nd</sup> Monthly Test</b>
		6 <sup>th</sup>		<b>RAM NABAMI</b>

April	5th	7th	<b>4TH SATURDAY HOLIDAY</b>
		1st	Describe the elementary concept of deep drawing
	1st	3rd	<b>UTKAL DIVAS</b>
		6th	concept of deep drawing
		7th	<b>GOOD FRIDAY</b>
	2nd	1st	Explain different sheet metal forming - bending shearing aid blanking
		3rd	Explain different sheet metal forming - bending shearing aid blanking
		6th	concept of deep drawing
		7th	<b>2<sup>ND</sup> SATURDAY HOLIDAY</b>
	3rd	1st	REVISION
		3rd	REVISION
		6th	<b>MOCK TEST</b>
		7th	<b>MOCK TEST</b>

*S*  
26.12.25  
Subject Expert  
Metallurgy Engg.

*[Signature]*  
26/12/2025  
HOD  
METALLURGY ENGINEERING  
Govt. Polytechnic Mayurbhanj

*[Signature]*  
26/12/2025  
Academic Co-ordinator  
Govt. Polytechnic Mayurbhanj