



DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	B.TECH. METALLURGICAL AND MATERIALS ENGINEERING		
Course Title	Mineral Processing and Metallurgical Analysis		
Course Code	MTPE01	No. of Credits	3
Course Code of Pre-requisite subject(s)	Nil		
Session	July 2022	Section (if, applicable)	NA
Name of Faculty	Dr. -Ing Prince Gideon Kubendran Amos	Department	MME
Email	prince@nitt.edu	Telephone No.	9843550816
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>Principles of combustion, testing of fuels, - Coal - Manufacture of metallurgical coke and its properties -typical energy consumption in metallurgical processes, overview of different raw materials (including fluxes) in metals processing</p> <p>Physical properties of minerals, physical and chemical characteristics of industrial minerals such as magnetite, haematite, galena, chalcopyrite, azurite, sphalerite, monazite, cassiterite, chromite, bauxite and ilmenite</p> <p>Mineral Processing: economics of ore processing; Comminution – Principle, comminution theories, Crushing and grinding – equipment and working principle. Laboratory and industrial screening.</p> <p>Classification: Principles of classification - settling velocity, Classifiers, hydrocyclones. Gravity concentration - Jigs and Tables, Heavy medium separation</p> <p>Froth flotation-principles, types of reagents. Magnetic and electrical separation. Dewatering –thickening and filtering. Use of flow sheets (specific examples from metals processing), wet and dry sampling. Introduction to hydrometallurgy.</p> <p>Principles of chemical analysis - ores, metals, alloys, details of specific chemical analysis techniques, introduction to common analysis techniques used in metallurgical industries.</p>			
COURSE OBJECTIVES			
Theoretical aspects of common mineral processing techniques and the associated equipment used in mining and pre-extraction practices.			

COURSE OUTCOMES (CO)				
Course Outcomes			Aligned Programme Outcomes (PO)	
At the end of the course student will be able to:				
1. Understand the principles of combustion and manufacturing of coke			1, 2, 7, 12	
2. Describe the physical and chemical properties of various minerals and ores			2, 3, 12	
3. Explain the principles and applications of various size reduction techniques and screening methods			1, 2, 3, 4	
4. Know and understand the various concentration techniques used in the mineral processing industries			1, 3, 4, 6, 7	
5. Understand the common analysis techniques used in metallurgical industries			4, 5, 10, 12	
COURSE PLAN – PART II				
COURSE OVERVIEW				
Understanding theoretical aspects of common mineral processing techniques				
COURSE TEACHING AND LEARNING ACTIVITIES				
S.No.	Week/Contact Hours	Topic	Mode of Delivery	
1	I -II	Terminologies	Conventional	
2	III	Coal		
3	IV-VI	Comminution		
4	VII-IX	Concentration		
5	X-XI	Separation		
6	XII	Metallurgical Analysis		
COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.No.	Mode of Assessment	Week	Duration (Hours)	% Weightage
1	Assignment	As per the Institute's time table	7 (Days)	25
2	Mid - Semester		1	25
3	Review Communique		0.5 (30 minutes)	20
CPA	Compensation Assessment		1	25
4	Final Assessment		2	30

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

The exit survey will be assessed based on the questionnaire prepared by the class teacher and expected attainment is 75% on 1-10 scale basis

COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

Email/Mobile/Whatsapp

COMPENSATION ASSESSMENT POLICY

It will be given during XI week for those who are absent on genuine grounds for the Mid semester examination or quiz.

ATTENDANCE POLICY

- Institute guidelines will be followed for attendance.

ADDITIONAL INFORMATION

The Course faculty is available for consultation at any time. Students can contact the faculty at any time through whatsapp or phone call or by mail.

FOR APPROVAL



Course Faculty



CC-Chairperson



HOD