NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Dept MME (Meta)

SRS / IMSM / V Sem / MTPC 18 / 2023 / v Aug 28 2023 / pp 4

(Important details already conveyed to the class and to the Class Committee)

COURSE OUTLINE TEMPLATE			
Course Title	**IRON MAKING AND STEEL MAKING** (AY 2023 2024)		
Course Code	**MT PC 18 (old 21)**	No. of Credits	**Four** (3 1 0 4)
Department	**MME** (Meta)	Faculty	Prof SankaraRaman Sankaranarayanan (SRS)
Pre-requisites Course Code	(MTPC old 13) Metallurgical Thermodynamics and (MTPC old 17) Transport Phenomena		
Course Coordinator(s) (if, applicable)	SRS (Raman)		
Other Course Teacher(s)/Tutor(s) E-mail	(others: Nil) **raman@nitt.edu**	Telephone No.	**98947 02353** X 3450 (MME office) WA: **9385612153**
Course Type	**Core course** (BTech MME Programme Core)		

COURSE OVERVIEW

A **first course** in iron making and steel making (IMSM); awareness about steel industry

COURSE OBJECTIVES

1. Become familiar with iron making and steel making
2. Understand how principles of thermodynamics and metallurgical transport phenomena are used in iron making and steel making
3. Become aware of the steel industry

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Classify furnaces and equipment used for IMSM 2. Analyze factors influencing the quality of product 3. Analyze irregularities and causes of failures 4. Compare the traditional steel making to modern day manufacturing routes for the improvement of quality and productivity	[10, 11, 5] [10, 11, 5] [2, 1] [11, 1, 2]

COURSE TEACHING AND LEARNING ACTIVITIES

Indicative sequence:

1. (Details already available in the NITT web page of cited teacher)
2. Initial: Introduction to the steel industry and sequence of operations in the steel plants
3. Blast furnace iron making and alternate routes of iron making
4. Oxygen steel making
5. Electric steel making
6. Refining of liquid steel
7. Continuous casting of steels
8. (Input on aspects related to energy, environment, quality, productivity)
9. (**Appropriate numerical problems on selected topics** in IMSM)
10. (Mode of delivery: predominantly **chalk and talk**)

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	THREE SURPRISE TESTS in the class room	Hints about imminent surprise test will be given to the class, few days in advance	One hour, each	20% each, adding to 60%
2.	End semester / final exam on full syllabus	(Common schedule)	Three hours	40%

ESSENTIAL READINGS: Textbooks, reference books, Websites, journals, etc
Primary text: **Ahindra Ghosh and Amit Chatterjee**, **Iron making and steel making**: Theory and practice, PHI EEE, New Delhi, 2008 (listed price Rs375/-) (**students advised to have a personal copy** – for usage during the course and for subsequent reference)

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)
Feedback encouraged; (will use input from dept MME for format**)**
COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)
Students expected to participate in earnest and honest manner **Active discussion encouraged in the class room** Students will be **mentored** towards challenges in / competitions organized by the steel industry **Students expected to attend all classes** Attendance requirement – vide **prevailing policy**
ADDITIONAL COURSE INFORMATION

Contents of this IMSM course will also be useful if the student opts to attend an **elective in process modeling** OR an **elective in ladle metallurgy and continuous casting**;

Subject to Institute guidelines, effort will be made towards guest lectures by external experts.

Subject to Institute guidelines, effort will be made towards visiting a steel plant (has materialized only for some batches).

FOR SENATE'S CONSIDERATION

Course Faculty __SRS__ CC-Chairperson _____ HOD _____