DEPARTMENT OF METALLURGICAL AND MATERIALS ENGG.

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	FOUNDRY TECHNOLOGY		
Course Code	MT 701	**No. of Credits**	3
Department	MME	**Faculty**	Dr. S.P.Kumaresh Babu
Pre-requisites Course Code	---	**Section (if, applicable)**	--
Course Coordinator(s) (if, applicable)		**Department**	MME
Other Course Teacher(s)/Tutor(s) E-mail	babu@nitt.edu	**Telephone No.**	9487438564 Intercom : 3462
Course Type	**Core course**		

Syllabus (approved in BoS)

Understanding concepts of Solidification of metal casting. Types, design of patterns, Allowances material selection, manufacture of patterns.

Classification of moulding proesses, mould materials, basic requirement of mould sands, preparation of mould sands, bonds formed in moulding aggregates, Resin binder processes, Sand mouldings – Bonded sand moulds and unbonded sand moulds. Core making processes, plaster moulding processes, ceramic moulding processes, investment casting processes, graphite moulding processes, permanent mould casting processes, die casting processes, types of centrifugal casting processes, continuous casting processes, new casting processes – Squeeze casting, semi solid metal casting, directional solidification processes, CLA process, Thixocasting and Rheocasting processes.

Construction use and operation of electric arc furnace [Direct and Indirect Arc], resistance furnace - core and core less induction, cupola, rotary and crucible furnaces.

Layout, mechanization and automation, fettling, inspection and pollution control.

Casting design, methoding, Gating and Risering calculations, improvement of yield and efficiency, simple problems in gating and risering for steels and cast irons. Solidification and simulation of metal casting, Phase field modeling, Casting defects Identification, analysis and Remedies.

COURSE OBJECTIVES

1. Gain knowledge of the concepts, operating procedures, applications, advantages and limitations of various furnaces used in foundry shop.
2. To know how the metals casting takes place by various casting process such as die casting, centrifugal casting etc.

COURSE OUTCOMES (CO)	
Course Outcomes	**Aligned Programme Outcomes (PO)**
Upon completion of this class, students are expected to	
1. Know the furnaces used in the production of metals and alloys	1
2. Understand melting practice that takes place in the different furnaces	1
3. Describe different types of molding, casting and solidification processes	1,7
4. Differentiate between the different casting processes and their end products	1
5. Develop designs for engineering components produced via against defects	1,3,9

COURSE PLAN – PART II

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1st Aug to 2nd week, Sept.,19	Classification of moulding processes, mould materials, basic requirement of mould sands. preparation of mould sands, bonds formed in moulding aggregates, Resin binder processes, Sand mouldings – Bonded sand moulds and unbonded sand moulds. Core making processes, plaster moulding processes, ceramic moulding processes, investment casting processes, graphite moulding processes, permanent mould casting processes, die casting processes, types of centrifugal casting processes, continuous casting processes, new casting processes Squeeze casting, semi solid metal casting, directional solidification processes, CLA process, Thixocasting and Rheocasting processes.	Chalk and Board, Power point
2	3rd Sept.to 1st week Oct.,19	Construction use and operation of electric arc furnace [Direct and Indirect Arc], resistance furnace - core and core less induction, cupola, rotary and crucible furnaces.	Chalk and Board, Power point

3	1st Mid- week to 3rd Oct., 19	Layout, mechanization and automation, fettling, inspection and pollution control.	Chalk and Board, Power Point
4	4th Oct, 1st –2nd week Nov,19	Casting design, methoding, Gating and Risering calculations, improvement of yield and efficiency, simple problems in gating and risering for steels and cast irons. Solidification and simulation of metal casting, Phase field modelling, Casting defects Identification, analysis and Remedies.	Chalk and Board, Power Point

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment - I	1th week September'19	1 hr	20
2	Assessment - II	2nd week October'19	1 hr	20
3	Seminar /Assignment	---	---	10
4	Final Assessment	November/December' 19	3hrs	50

COURSE EXIT SURVEY

Student's Feedback

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc): communication through class reps through mobile and E-mail.

ATTENDANCE: Minimum attendance 75%. If less than 75% attendance, He /She will be prevented from writing the end semester and re-do the course. Students secured F grade should re-appear the examination as per Institute norms

COMPENSATION ASSESSMENT : If any students miss the test in genuine ground (production of certificate or letter from the authorized personnel), She / he will be permitted for compensation assessment

ACADEMIC HONESTY & PLAGIARISM: If any students involve in malpractice in test or final examination, She /he will be prevented from writing the final assessment and awarded F grade and re-do the course (as per Instt. Regulations)

ADDITIONAL INFORMATION

Nil

FOR APPROVAL

Course Faculty	CC-Chairperson	HOD
(Dr.S.P.Kumaresh Babu)	(Dr.S.P.Kumaresh Babu)	(Dr.S.Kumaran)