

<b>COURSE PLAN – PART I</b>			
<b>Course Title</b>	<b>Particulate Technology</b>		
<b>Course Code</b>	MT621	<b>No. of Credits</b>	3
<b>Department</b>	MME	<b>Faculty</b>	Dr. P. VIVEKANANDHAN
<b>Pre-requisites Course Code</b>	---	<b>Section (if, applicable)</b>	--
<b>Course Coordinator(s) (if, applicable)</b>		<b>Department</b>	MME
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>	--	<b>Telephone No.</b>	9865392902 Intercom : -
<b>Course Type</b>	<input type="checkbox"/> <b>Core course</b> <span style="margin-left: 150px;"><input checked="" type="checkbox"/> <b>Elective course</b></span>		
<b>Syllabus (approved in BoS)</b>			
<p>Introduction to particulate processing – advantages, limitations and applications of particulate processing</p> <p>Science of particulate processing – issues related to particle morphology – differences in mechanical behaviour (with respect to cast and wrought materials) and related mathematical treatment - similarities and differences between metal powder and ceramic powder processing</p> <p>Production and characterisation of metal and ceramic powders – compaction processes – powder properties and powder compaction – Pressing, Hot Isostatic Processing and extrusion</p> <p>Sintering – thermodynamic and process aspects – recent developments in mechanical alloying and reaction milling</p> <p>Production of particulate composites - application of P/M based on case studies - manufacturing of typical products – near net shape processing</p>			
<b>COURSE OBJECTIVES</b>			
1. To introduce the importance non-conventional processing routes for different materials and its importance for advanced materials manufacturing.			
<b>COURSE OUTCOMES (CO)</b>			
<b>Course Outcomes</b>			<b>Aligned Programme Outcomes (PO)</b>
<b>At the end of the course student will be able to:</b>			
1. Understand the fundamental concepts of particulate processing methods, advantages and limitations.			1
2. Able to understand the science of particulate processing, microstructural – property correlation over conventional methods			1, 2, 3

3. Know the various methods of powder production and compaction approaches.	5,7
4. Understanding the thermodynamics involved during sintering process.	9
5. Application of particulate technology in various applications.	10, 11

## COURSE PLAN – PART II

### COURSE OVERVIEW

Introduction to particulate processing – advantages, limitations and applications of particulate processing

Science of particulate processing – issues related to particle morphology – differences in mechanical behaviour (with respect to cast and wrought materials) and related mathematical treatment - similarities and differences between metal powder and ceramic powder processing

Production and characterisation of metal and ceramic powders – compaction processes – powder properties and powder compaction – Pressing, Hot Isostatic Processing and extrusion

Sintering – thermodynamic and process aspects – recent developments in mechanical alloying and reaction milling

Production of particulate composites - application of P/M based on case studies - manufacturing of typical products – near net shape processing

### COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	2 <sup>nd</sup> – 3 <sup>rd</sup> Week Sep 2021	Introduction to particulate processing – advantages, limitations and applications of particulate processing	Power point, Online Mode and through Course material
2	4 <sup>th</sup> Week Sep – 1 <sup>st</sup> Week Oct 2021	Science of particulate processing, differences in mechanical behaviour and related mathematical treatment and similarities and differences between metal powder and ceramic powder processing	Power point, Online Mode and through Course material
3	2 <sup>nd</sup> Week Oct to 3 <sup>rd</sup> Week Nov 2021	Sintering – thermodynamic and process aspects – recent developments in mechanical alloying and reaction milling	Power point, Online Mode and through Course material
4	4 <sup>th</sup> Week Nov to 1 <sup>st</sup> Week Dec 2021	Production of particulate composites - application of P/M based on case studies - manufacturing of typical products – near net shape processing	Power point, Online Mode and through Course material

5	2 <sup>nd</sup> Week - 3 <sup>rd</sup> Week Dec 2021	Understanding the toxicity of nanoparticles and fibers, exposure to quartz, asbestos, air pollution. Environmental issues and Societal implications.	Power point, Online Mode through Course material
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**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Mid-Sem Test	3 <sup>rd</sup> week Oct '21	1 hr 30 min	25
2	Assignment	2 <sup>nd</sup> week Nov'21	-	20
3	Seminar cum Viva / Report on case study	1 <sup>st</sup> week Dec '21	-	25
CPA	Compensation Assessment	1 <sup>st</sup> Week Dec '21	-	25
5	End semester exam	4 <sup>th</sup> Week of Dec'21	2hrs	30

**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**

 P. Vivekanandhan (VIVEKANANDHAN P)	 S. Muthukumar CC-Chairperson	 B. Ravisankar HOD
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