



COURSE PLAN – PART I			
Name of the programme and specialization	MTech (Common to all MTech, MME)		
Course Title	Particulate Technology		
Course Code	MT621	No. of Credits	03
Course Code of Pre-requisite subject(s)	Nil		
Session	July 2022	Section (if, applicable)	Nil
Name of Faculty	Dr S KUMARAN	Department	MME
Official Email	kumara@nitt.edu	Telephone No.	9944434705
Name of Course Coordinator(s) (if, applicable)	Dr S Muthukumar		
Official E-mail		Telephone No.	
Course Type (please tick appropriately)	<input type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
<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>			
To introduce the importance non-conventional processing routes for different materials and its importance for advanced materials manufacturing			



MAPPING OF COs with POs	
Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
1. Describe the basic mechanism of powder production for variety of materials to meet the demand of the research and industrial needs	2,4
2. Characterize the various powders (materials) based on the engineering applications Differentiate the processing routes for various powders (materials) and associated technology	5,6,7
3. Define modern day processing routes and apply them successfully to materials processing	3,5,7
4. Apply the powder metallurgy concepts to design new materials for advanced engineering materials	3,7
5. Apply the concepts of particulate processing to produce non-conventional materials which are difficult to produce other techniques	8, 10

COURSE PLAN – PART II			
COURSE OVERVIEW			
<ul style="list-style-type: none"> <li>• Particulate processing – advantages, limitations and applications of particulate processing</li> <li>• Production and characterisation of metal and ceramic powders</li> <li>• compaction processes</li> <li>• Sintering</li> <li>• Production of particulate composites - application of P/M based on case studies - manufacturing of typical products – near net shape processing</li> </ul>			
COURSE TEACHING AND LEARNING ACTIVITIES			( Add more rows)
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1 <sup>st</sup> to 2 <sup>nd</sup> week, September	<ul style="list-style-type: none"> <li>• Particulate processing – advantages, limitations and applications of particulate processing</li> </ul>	Chalk and Board
2	3 <sup>rd</sup> to 4 <sup>th</sup> week September	<ul style="list-style-type: none"> <li>• Production and characterization of metal and ceramic powders</li> </ul>	Chalk and Board
3	4 <sup>th</sup> week September., to 3 <sup>rd</sup> week October	<ul style="list-style-type: none"> <li>• compaction processes</li> <li>• Sintering</li> </ul>	Chalk and Board



4	4 <sup>th</sup> week October to 4 <sup>th</sup> week November	<ul style="list-style-type: none"> <li>Production of particulate composites - application of P/M based on case studies - manufacturing of typical products – near net shape processing</li> </ul>	Chalk and Board
---	--	---	-----------------

**COURSE ASSESSMENT METHODS** (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assignment	2 <sup>nd</sup> week October	1hr	10
2	Particulate Technology Practical	4 <sup>th</sup> October	10hrs	15
3	Assessment (Written Test)	4 <sup>th</sup> week October	11/2 hrs	25
CPA	Compensation Assessment	3 <sup>rd</sup> week November	11/2hrs	25
4	Final Assessment	December	3hrs	50

**\*mandatory; refer to guidelines on page 4**

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

Student's Feedback

**COURSE POLICY** (including compensation assessment to be specified)

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

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

**ACADEMIC DISHONESTY & PLAGIARISM**

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both



## NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI


students get the same penalty of zero mark.

- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

### ADDITIONAL INFORMATION, IF ANY

Nil

### FOR APPROVAL

  
Course Faculty \_\_\_\_\_  
\_\_\_\_\_

  
CC- Chairperson \_\_\_\_\_

  
HOD



**Guidelines**

- a) The number of assessments for any theory course shall range from 4 to 6.
- b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.