

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Code & Title	MT 660 - Advanced material processing laboratory		
Department	MME	No. of Credits	2
Degree & Branch	M.Tech – Industrial Metallurgy	Faculty	Mr.R.Nivas
Pre-requisites Course Code	Not required		
Course Coordinator(s) (if applicable)	Not applicable		
Tutor(s) E-mail	nivas@nitt.edu	Contact No.	8903486557
Course Type	Laboratory Course		
COURSE OVERVIEW			
To provide hands on experience on latest technologies to students which would equip them in understanding the theoretical concepts learnt much better. To make the students understand the scope and limitations of different processing techniques			
COURSE OBJECTIVES			
The objective of this laboratory course is to provide an insight for the latest developments in materials processing.			
COURSE OUTCOMES (CO)			
Course Outcomes		Aligned Programme Outcomes (PO)	
1. Understands the working principles of different advanced processes		[1]	
2. Synthesize nanostructured materials by advanced processing methods.		[1,4,7]	
3. Perform experiments with best practices and understands the advantages and limitations of different processes		[2,6]	
4. Interpret and analyze the data and present the results in a concise written format		[3,5]	
5. Recommend a suitable process for modifying the material properties.		[1,6]	
COURSE TEACHING AND LEARNING ACTIVITIES			
Sl.No	Week	Topic	Mode of Delivery
1	Week 1	Introductory class – explaining the experiments involved	<ul style="list-style-type: none"> • Chalk and Talk • Demonstration

2	Week 2	Fabrication of nanostructured coatings by plasma electrolytic processing	Laboratory work
3	Week 3	Mechanochemical synthesis of nanostructured compounds	Laboratory work
4	Week 4	Microwave synthesis of nanosized ceramic powders	Laboratory work
5	Week 5	Diffusion bonding of Materials	Laboratory work
6	Week 6	Equichannel angular processing of materials	Laboratory work
7	Week 7	Cryo-rolling of materials	Laboratory work
8	Week 8	Vacuum arc melting of materials	Laboratory work
9	Week 9	Spark plasma sintering of materials	Laboratory work
10	Week 10	Microwave sintering of materials	Laboratory work
11	Week 11	In-situ synthesis of metal matrix composites by casting	Laboratory work

COURSE ASSESSMENT METHODS

Sl.No	Mode of Assessment	Week/Date	% Weightage
1	Observation	Every week	50 %
2	Record work	Before assessment	25 %
4	Assessment a) Practical / Written b) Viva voce		15 % 10 %

ESSENTIAL READINGS : Textbooks, reference books etc.,

1. Rao, P.N, 'Manufacturing Technology', Tata McGraw Hill, 1996.
2. Altan T, Metal forming: Fundamentals and Applications (ASM Series in Metal processing)
3. Dieter, "Mechanical Metallurgy", Mc Graw Hill Publishers, NY,2002
4. Pradeep T "Nano: The Essentials", Mc Graw Hill Publishing Co. Ltd., 2007
5. Mick Wilson et al, "Nanotechnology", Overseas Press (India) Pvt. Ltd., 2005.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

The exit survey will be assessed based on the questionnaire prepared by the Institute/class teacher and the expected attainment to be greater 75%. The feedback collected from students by the Institute is to be informed to the teacher to improve the course in future semesters.




COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

1. The students are expected to attend all the classes except for medical reasons. Minimum attendance of 75% (including the concession for on-duty and medical reasons) is required for writing the semester examination.
2. The relative grading policy will be followed and the passing minimum marks will be fixed based on Institute guidelines.

ADDITIONAL COURSE INFORMATION

NIL

FOR SENATE'S CONSIDERATION

		
Course faulty (R.Nivas)	CC-Chairperson (Dr.S.Muthukumaran)	HOD (Dr.S.P.Kumaresh Babu)