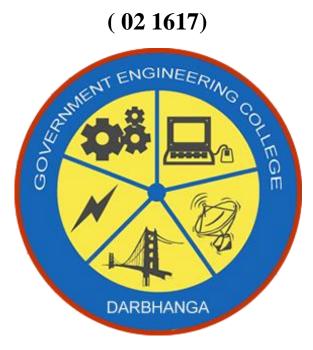
DARBHANGA COLLEGE OF ENGINEERING

COURSE FILE

OF

NON CONVENTIONAL MANUFACTURING

(02 1617)



Mr. Rajat Gupta **Assistant Professor** Department of Mechanical Engineering

College Name	Darbhanga College of Engineering		
Program Name	B.Tech Mechanical Engineering		
Course Name	Non Conventional Manufacturing		
Course Code	02 1617Course Credit4		4
Lecture/Tutorial	03/01		
Per Week			
Course Coordinator	Mr. Rajat Gupta		
Name			

1. Scope and Objectives of the Course

In this course students will probably start with basic understanding of non conventional manufacturing process. Several types of non-traditional machining processes have been developed to meet extra required machining conditions. The aim of the course is to develop a basic understanding for common non conventional manufacturing process.

On successful completion of the course, the student will be able to,

- i. Classify the various non-traditional machining processes.
- ii. Identify important process parameters associated with various non-traditional machining processes.
- iii. Explain the effect of process parameters on performance characteristics like material removal rate and surface finish etc.
- iv. To understand the applications of different processes.

2.<u>Text Books</u>

TB 1 : Manufacturing Technology ,Volume 2; P.N.Rao, Tata McGraw-Hill Private limited, 2009.

TB 2 : Production Technology; R.K.Jain, Khanna Publishers, 2009.

3. <u>Reference books</u>

RB 1: Advanced Machining Processes; V. K. Jain, Allied Publishers, 2009.

RB 2: Manufacturing Science; Amitabha Ghosh and Asok Kumar Mallik, East- West Private limited, 2007.

RB 3: Welding Principle and Practices; Edward R. Bohnart, McGraw-Hill Private limited, 2005.

RB 4: Non traditional Manufacturing Processes; Gary F. Benedict, Taylor & Francis, 1987.

3. Other readings and relevant websites :

S. No.	Link of websites
1	http://nptel.ac.in/courses/112105126/36
2	https://youtu.be/A0dTvf_Q8BA

4. Course Plan

Lecture	Date of	Topics	Web	Text Books,	Page numbers
No.	Lecture		links for	Reference Books and	of the text
			video	other reading	books
			lectures	materials	
1-2		Introduction			
		Limitation of		TB1, TB2,RB1, RB2	TB1: 293-294
		conventional			TB2: 342
		manufacturing process,			
		Need of unconventional			
		manufacturing process			
		and it's classification			
		Assignment 1			
3-14		Unconventional			
		machining process			
		Principle and working		TB1, RB1, RB2	TB1: 295-334
		and applications of			TB2: 343-370
		unconventional			
		machining process such			
		as electro – discharge			
		machining,			
		electrochemical			
		machining, ultrasonic			
		machining, abrasive jet			

	machining		
	Assignment 2		
	Tutorial 1, 2, 3 &4		
15-26	Unconventional		
	welding process		
	Principle and working and	TB2,RB3	TB2: 272-312
	applications of		
	unconventional welding		
	processes such as laser		
	beam welding, electron		
	beam welding, ultrasonic		
	welding, plasma arc		
	welding.		
	Assignment 3		
	Tutorial 5,6 & 7		
27-30	Explosive welding		
	cladding etc. under	TB2, RB3	TB2: 303-307
	water welding,		
	metallising		
	Tutorial 8, Assig	gnment 4	
31- 42	Unconventional forming		
	processes :		

Principle, working and		TB2, RB4	TB2: 367-380
applications of high			
energy forming processes			
such as explosive			
forming, electromagnetic			
forming, electro-discharge			
forming, water hammer			
forming, explosive			
compaction etc			
Tutorial 9,10 & 11, Assignment 5			1

5. Evaluation Scheme

Component 1	Mid semester examination	20
Component 2	class test	5
Component 3	ТА	5
Component 4	End Semester Examination	70
Total		100

6. <u>Syllabus</u>

Topics	No. of lectures	Weightage
Introduction: Limitation of conventional manufacturing	2	6%
process, Need of unconventional manufacturing process and		

it's classification		
Unconventional machining process: Principle and working	12	28%
and applications of unconventional machining process such as		
electro - discharge machining, electrochemical machining,		
ultrasonic machining, abrasive jet machining		
Unconventional welding process: Principle and working and	12	28%
applications of unconventional welding processes such as		
laser beam welding, electron beam welding, ultrasonic		
welding, plasma arc welding.		
Explosive welding: Cladding etc. under water welding,	4	10%
metallising		
Unconventional forming processes: Principle, working and	12	28%
applications of high energy forming processes such as		
explosive forming, electromagnetic forming, electro-		
discharge forming, water hammer forming, explosive		
compaction etc		

7. <u>This document is approved by</u>

Designation	Name	Signature
Course Co-ordinator	Rajat Gupta	
HOD	Mr. Vishnu Singh	
Principal	Prof. Achintya	