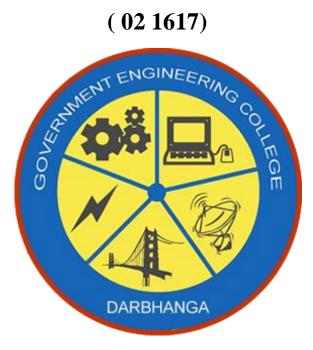
# **DARBHANGA COLLEGE OF ENGINEERING**

### **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			
<b>Course Coordinator</b>	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	