Academic Course Description

BHARATH UNIVERSITY
Faculty of Engineering and Technology
Department of Mechanical Engineering
BME505 - MANUFACTURING TECHNOLOGY II
Fifth Semester, 2015-16 (Odd Semester)

Course (catalog) description

To understand the concept of basic engineering mechanism

Compulsory : **MANUFACTURING TECHNOLOGY II**

Credit hours : 3

Course Coordinator : Mr. V.P.Durairaj

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Mr. R. J. Golden Renjith Nimal	IIInd Year Mech, Sec 'A', 'B'	SK 001, SK 002	9994351938	goldenrenjith.mech@bharathuniv.ac.in	9.00 to 9.50 am
Mr. R. Hariharan	IIInd Year Mech, Sec 'C'	SK 003	9884918458	hariharan.mech@bharathuniv.ac.in	10.50 to 11.40

Relationship to other courses:

Pre –requisites : MANUFACTURING TECHNOLOGY I

Assumed knowledge : To understand the concept and basic mechanics of metal cutting, working of standard machine tools such as lathe, shaping and allied machines, milling, drilling and allied machines, grinding and allied machines and broaching. To understand the basic concepts of non-traditional machining processes.

Following courses : Automobile Engineering

Syllabus Contents : 5 Units

Total sessions : 45

Computer usage : nil

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	100%

Broad area : Manufacturing Technology

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	August 1st week	Session 1 to 14	2 Periods
2	Cycle Test-2	September 2nd	Session 15 to 28	2 Periods
3	Model Test	week October 2nd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

Familiarize the students with the fundamental concepts of Manufacturing Technology and to highlight of their applications for future carrier	Correlates to program outcome		
	H	M	L
Learn about surface finishing process	A,C,L	B	F,G,H,I,J
Learn gear and gear manufacturing process	A,C,L	B	F,G,H,I
Study about non traditional machining techniques	A	a	
Upon completion of this course, the students can able to understand high energy rate forming	A,C	B,C	F,G,H,I
Learn the basic concepts of NTM.	A,C,L	B	
Learn plastic material and its process	A,C,L	B	F,G,H,I

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

Session	Topics	Problem Solving (Yes/No)	Text / Chapter
	Unit 1 Surface finishing process		
1.	Grinding processes	No	[T2] chapter - 5, [R1] chapter -3
2.	Types of grinding machines	No	
3.	Work holding devices	No	
4.	Grinding wheels and specifications	No	
5.	Mounting and balancing of grinding wheel	No	
6.	Honing, Super finishing	No	
7.	Polishing, Buffing	No	
8.	Metal spraying	No	
9.	Galvanizing and Electroplating	No	
	Unit 2 Gear and Gear manufacturing		
10.	Types of gears and manufacturing processes	No	
11.	Gear milling, gear shaping	No	
12.	Gear planning, Gear hobbing	No	
13.	Gear broaching	No	[T2] chapter – 6
14.	Gear stamping,	No	
15.	Gear rolling, Drawing processes	No	
16.	Sintering processes	No	
17.	Gear finishing: Gear shaving, Gear grinding	No	
18.	Gear lapping, Gear Honing	No	
UNIT 3 Non-traditional machining processes			
19.	Non-traditional machining techniques	No	[T2] chapter – 6, [R1] chapter - 8
20.	Classifications of Non-traditional machining	No	
21.	Process Parameter, Process capabilities and Applications of Abrasive jet machining	No	
22.	Process Parameter, Process capabilities and Applications of Electric Discharge Machining	No	
23.	Process Parameter, Process capabilities and Applications of E.D.Wire cutting	No	
24.	Process Parameter, Process capabilities and Applications of Electro chemical machining	No	
25.	Process Parameter, Process capabilities and Applications of Electron beam machining	No	
26.	Process Parameter, Process capabilities and Applications of Laser beam machining	No	
27.	Process Parameter, Process capabilities and Applications of Abrasive jet machining Ultra sonic machining	No	
UNIT 4 High Energy Rate Forming Process (HERF)			

28.	Basic concept of High Energy Rate Forming	No	[T2] chapter– 4, [R1] chapter–2
29.	Principle and operation of Explosive forming	No	
30.	Process Parameter, Process Capabilities and application of Explosive forming	No	
31.	Principle and operation of Electro hydraulic process	No	
32.	Process Parameter, Process Capabilities and application of Electro hydraulic process	No	
33.	Principle and operation of Electro Magnetic forming process	No	
34.	Process Parameter, Process Capabilities and application of Electro Magnetic forming process	No	
35.	Principle and operation of Dyna pack machine process	No	
36.	Process Parameter, Process Capabilities and application of Dyna pack machine process	No	
UNIT 5 Plastic Materials and processes			
37.	Types of Plastics and Types of Moulding	No	
38.	Compression moulding	No	
39.	Transfer moulding	No	
40.	Injection moulding	No	
41.	Blow moulding	No	[T2] chapter– 5,6
42.	Film and sheet forming	No	[R1] chapter–7
43.	Thermo forming	No	
44.	Reinforced Plastics	No	
45.	Laminated Plastics	No	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Assignment / Seminar / Online Test / Quiz	-	5%
Attendance	-	5%
Final exam	-	70%

Prepared by **:** V.P.Durairaj

Addendum

ABET Outcomes expected of graduates of B.Tech / MECH / program by the time that they graduate:

a) The ability to apply knowledge of mathematics, science, and engineering fundamentals.

b) The ability to identify, formulate and solve engineering problems.

c) The ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

d) The ability to design and conduct experiments, as well as to analyze and interpret data

e) The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

f) The ability to apply reasoning informed by the knowledge of contemporary issues.

g) The ability to broaden the education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

h) The ability to understand professional and ethical responsibility and apply them in engineering practices.

i) The ability to function on multidisciplinary teams.

j) The ability to communicate effectively with the engineering community and with society at large.

k) The ability in understanding of the engineering and management principles and apply them in project and finance management as a leader and a member in a team.

l) The ability to recognize the need for, and an ability to engage in life-long learning.

Program Educational Objectives

PEO1: PREPARATION:
Mechanical Engineering graduates are enthusiastic to provide strong foundation in mathematical, scientific and engineering fundamentals necessary to analyze, formulate and solve engineering problems in the field of Mechanical Engineering.

PEO2: CORE COMPETENCE:
Mechanical Engineering graduates have competence to enhance the skills and experience in defining problems in the field of Mechanical Engineering and Technology design and implement, analyzing the experimental evaluations, and finally making appropriate decisions.

PEO3: PROFESSIONALISM:
Mechanical Engineering graduates made competence to enhance their skills and embrace new thrust areas through self-directed professional development and post-graduate training or education.

PEO4: PROFICIENCY:
Mechanical Engineering graduates became skilled to afford training for developing soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, inter personal relationship, group discussion and leadership skill to become a better professional.

PEO5: ETHICS:
Mechanical Engineering graduates are morally merged to apply the ethical and social aspects of modern Engineering and Technology innovations to the design, development, and usage of new products, machines, gadgets, devices, etc.

Course Teacher	Signature
Mr. R. J. Golden Renjith Nimal Mr. R. Hariharan	

Course Coordinator **HOD/MECH**
Mr. V.P.Durairaj