

Academic Course Description
BHARATH UNIVERSITY
 Faculty of Engineering and Technology
 Department of Mechanical Engineering
BME701 – INDUSTRIAL ENGINEERING

Seventh Semester, 2016-17 (odd Semester)

Course (catalog) description

To impart knowledge in undertaking market research, demand forecasting and costing for designing plant, operation, production, maintaining standards of professional ethics.

Compulsory/Elective course : Compulsory

Credit & contact hours : 3 & 45

Course Coordinator : Mrs. Sucharitha.G

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@bharathuniv.ac.in)	Consultation
Mr.R.Raja	IV year,Mech A, B	JR 102, 103	9840222479	hod.mech@bharathuniv.ac.in	11.40 to 12.30 pm
Mr.Amaladasan	IV year,Mech C, D	JR 104, 105	9787451639	amaladasan.mech@bharathuniv.ac.in	2.20 to 3.10 pm
Mrs.G.Sucharitha	IV year,Mech A, B	JR 111	9840590726	sucharithag.mech@bharathuniv.ac.in	10.50 to 11.30 am

Relationship to other courses:

Pre –requisites : **KNOWLEDGE ABOUT MANUFACTURING ,MACHINERY AND METHODS**

Assumed knowledge : *By understanding the concept of running the Industries, maintenance and related case studies.*

Following courses :

Syllabus Contents**UNIT I PRODUCTION AND PRODUCTIVITY****9**

Definitions-Productivity, Effectiveness, and Types-Factors Influencing Productivity-Techniques To Improve Productivity, Technology Based Techniques and material Based Productivity Improvement-Inventory Control-M.R.P-Quality Circles-Brainstorming-Pareto Analysis-Cause And Effect Analysis-TQM-Zero Defects-Flexitime-Just In Time-Ergonomics-Reliability Improvement-Modular Design-Maintainability.

UNIT II PLANT LAYOUT /LOADING AND SCHEDULING**9**

Types of Layout, Its Advantages and Disadvantages-Preference of Different Types of Layout, Plant Location and Decision-Definitions: Group Technology-Principles of Material Handling. Loading- Master Scheduling- Perpetual Loading-Order Scheduling-Loading By Scheduled Method-Index Method Of Scheduling-Factors Influencing Scheduling-Production Planning And Control-Routing And Dispatching-Job Card-Job Order-Order Control And Machine Load Chart.

UNIT III WORKSTUDY

9

Techniques of Work Study-Procedure-Method Study, Types of Process Charts and Diagrams-Multiple Activity Chart-Utility-Time Study-Micro Motion Time Study-PMTS-Work Sampling-Job Analysis-Job Evaluation and Merit Rating-Wage and Wage Incentive.

UNIT IV INDUSTRIAL PSYCHOLOGY

9

Introduction-Nature And Scope-Objectives-Hawthorne Studies And Its Conclusion-Individual Behaviour-Group Behaviour,Types Of Groups-Formal And Informal Organizations-Fatigue –Accident,Major Factors,Prevention-Importance And Methods Of Training To The Employees, Methods And Aids-Leadership And Leadership Styles-Communication And Its Importance.

UNIT V STATISTICAL QUALITY CONTROL

9

Introduction to Quality Control-Statistical Measures-Control Chart-Types –Control Chart for Attributes-Control Chart for Number of Defects per Unit-Acceptance Sampling-Basic Probability-Normal Distribution-Acceptable Quality Level-Lot Tolerance Percent Defective-Average Outgoing Quality

TOTAL NO .OF PERIODS: 45**Text Books:**

1. Khanna.O.P. *Industrial Engineering and Management*, Khanna Publishers, New Delhi, 2000.
2. B.Kumar, *Industrial Engineering*, Hanna Publishers,2004
3. S.Ramachandran And K.Pandian *Principles Of Management And Industrial Psychology*, Air Walk Publishers, 2007.

References:

1. *Gupta And Petal, Work Study- Khanna Publishers, 1998.*

Computer usage: NIL**Professional component**

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	100%
		100.0
Professional subject	-	0%

Broad area : Work-study techniques to improve productivity

Test Schedule

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

Mapping of Instructional Objectives with Program Outcome

To impart knowledge in undertaking market research, demand forecasting and costing for designing plant, operation, production, maintaining standards of professional ethics.	Correlates to program outcome		
	H	M	L
Learn production & productivity	a, b, c, f, i	k, l	h
Demonstrate the knowledge of designing plants and scheduling	f	k	h
Study about work study techniques	f	k, l	h
A systematic understanding of industrial psychology	f	k, l	h
Learn quality control	f	k, l	h

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

Draft Lecture Schedule

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT – I Production and Productivity			
1.	Introduction	No	[T1] chapter - 2, [R3] chapter -1
2.	Production and productivity definition, effectiveness and types	No	
3.	Factors influence in productivity, techniques	No	
4.	Technology, material based techniques	No	
5.	Inventory control-MRP quality circles	No	
6.	Brain storming, pareto analysis, cause effect diagram	Yes	
7.	Zero defect , flex time, JIT	Yes	
8.	Ergonomics	No	
9.	Reliability improvement	No	
10.	Modular design and maintainability	No	
UNIT – II Plant layout			
11.	Introduction	No	[T1] chapter - 6, [T3] chapter - 4
12.	Plant layout – types , advantages, disadvantages	No	
13.	Plant location- definition group technology	No	
14.	Principles of material handling	No	
15.	Loading , master scheduling	No	
16.	Perpetual loading , order scheduling	No	
17.	Index method of scheduling , factors	No	
18.	Production planning and control	No	
19.	Routing and dispatching, job card	No	
20.	Job order, order control and machine load chart	No	
UNIT --III Work study			
21.	Introduction	No	[T1] chapter - 10, [R2] chapter - 6
22.	Techniques , procedure	No	
23.	Method study	No	
24.	Types of process charts and diagrams	No	
25.	Multiple activity chart and utility	No	
26.	Time study, micro motion study	Yes	
27.	PMTS , work sampling	Yes	
28.	Job analysis, job evaluation and merit rating	Yes	
29.	Wage and wage incentives	Yes	
UNIT --IV Industrial Psychology			
30.	Introduction	No	[T1] chapter - 12, [R2] chapter - 9
31.	Nature, scope, objectives	No	
32.	Hawthorne studies and its conclusion	No	
33.	Individual and group behavior	No	
34.	Types of groups, formal and informal organization	No	
35.	Fatigue, accidents , major factors	No	
36.	Prevention, importance	No	
37.	Methods of training, aids	No	
38.	Leadership and leadership styles	No	
39.	Communication and its importance	No	
UNIT -V Statistical quality control introduction			
40.	Statistical measures	Yes	[T1] chapter - 12, [R2] chapter - 9
41.	Control charts-types	Yes	
42.	Attributes, control charts for number of defects	Yes	
43.	Acceptance sampling	Yes	
44.	Basic probability, Acceptable quality level	Yes	
45.	Normal distribution, Lot tolerance percent defective, AOQ	Yes	

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 **Sucharitha.G**

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.

BME701 – INDUSTRIAL ENGINEERING

Course Teacher	Signature
Mr.R.Raja	
Mr.Amaladasan	
Mrs.G.Sucharitha	

Course Coordinator
Mrs.G.Sucharitha

HOD/MECH