MS TEC & TEX

MST4ME

A Digital Hand Guide on Basic Engineering

Bridging Gap between Institution and Industries

MST4ME

(An Android APP)

Required and suitable for students in

- Mechanical Engineering
- Mechatronics Engineering
- Automobile Engineering
- Production Engineering
- Aeronautical Engineering
- Tool & Die Engineering

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MST4ME

We proudly introduce ourselves that We are into providing Essential Employability Services to Mechanical Engineering Students.

HOW?

We have developed an Essential Digital Technical Hand guide as an Android App which will give Employability to them.

WHY?

The Core Engineering Industries who employ our Engineers expect basic knowledge from the candidates Something related to current manufacturing technology which is not covered in syllabus and or something they have not given much importance while studying and forgot later.

WHAT?

We have covered and included most of the required Technical Engineering Elements and developed an Android App (SNCL4ME) which will enable our students to get a Decent Job in Core Engineering Industries.

STATISTICS!

An average of 100 students per college from 520+ Engineering Colleges and 440+ Polytechnics. There are almost 1Lakh Mechanical Engineers are coming out from Engineering Colleges every year from Tamil Nadu.

IMPORTANT TIPS TO MECHANIACAL ENGINEERS

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Basic Engineering

- Engineering Drawing
- Engineering Calculations
- Fits
- Tolerance
- Geometrical Symbols
- Surface Roughness
- Material & Application
- Heat Treatment
- Welding
- NDT
- Surface Coatings

Engineering Drawing

- What is an Engineering Drawing
- How to Read Engineering Drawings
- Orthographic projection
- Isometric Projection
- First angle orthographic projection
- Third angle orthographic projection
- Difference between 1st Angle & 3rd An...
- Meaning of Lines
- Title block
- Bill of Materials

Engineering Drawing

Title block

Bill of Materials

Traditional locations for the BoM are above the title block, or in a separate document.
Bill Of Materials - BoM is a list of the materials in tabular format used to make a part, and/or the parts used to make an assembly. It may contain• Part number (number marked against that part in the assembly drawing)
• Name of the part
• Material of the part
• Quantity of the that particular part for making the assembly
• type of part whether it is to be made or a readymade/ standard part to be bought from the market like bolt, nut, spring, bearing etc

BILL OF MATERIAL

Sl No	Part No	Description	Drawing No	Matl	Size	Qty	Wt
14	14	Spring	STD		D40 x d3 x p7 x L70	2	
13	13	Dowel Pin	STD		Dia 10 x 40	4	
12	12	Allen Cap Screw	STD		M10 x 40	4	
11	11	Allen Cap Screw	STD		M12 x 60	8	
10	10	Guide pillar 2	PT006 / 1	EN24	As Per Drawing	1	
9	9	Guide Pillar 1	PT006 / 1	EN24	As Per Drawing	1	
8	8	Guide bush 2	PT006 / 1	EN24	As Per Drawing	1	
7	7	Guide Bush 1	PT006 / 1	EN24	As Per Drawing	1	
6	6	Die Housing	PT006 / 1	MS	As Per Drawing	1	
5	5	Punch Holder	PT006 / 1	MS	As Per Drawing	1	
4	4	Die	PT006 / 1	HCHCr	As Per Drawing	1	
3	3	Punch	PT006 / 1	HCHCr	As Per Drawing	4	
2	2	Top Bolster	PT006 / 1	MS	As Per Drawing	1	
1	1	Bottom Bolster	PT006 / 1	MS	As Per Drawing	1	

Engineering Calculations

Triangle Formulae

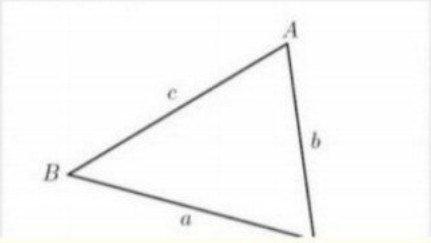
A common mathematical problem is to find the angles or lengths of the sides of a triangle when some, but not all of these quantities are known.
It is also useful to be able to calculate the area of a triangle from some of this information.
In this unit we will illustrate several formulae for doing this.
In order to master the techniques explained here it is vital that you undertake the practice exercises provided.

- solve triangles using the cosine formulae
- solve triangles using the sine formulae
- find areas of triangles

Contents

1. Introduction
2. The cosine formulae
3. The sine formulae
4. The area of a triangle

1. Introduction



Engineering Calculations

- Sphere
- Cylinder
- Cone
- Parallelogram
- Trapezoid
- Ellipse
- Equilateral Triangle
- Sector of a Circle
- Segment of Sector
- Drill Size for Tap Holes
- PCD Calculation
- Specific Gravity or Density
- Weight Calculation
- Conversion

Engineering Calculations

- Circle
- Square
- Square Inscribed in Circle

Square and Circle With Equal Area

Side of Square
Diameter of Circle x 0.8862

Diameter of Circle
Side of Square x 1.128

Circumference of Circle Side of Square x 3.545

- Rectangle
- Triangle
- Cube
- Pyramid
- Hexagon (equal sides and angles)
- Octagon (equal sides and angles)

CURRENT EMPLOYMENT SCENAIRO OF ENGINEERING STUDENTS

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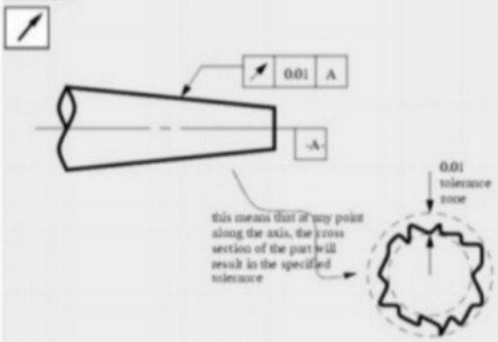
Geometrical Symbols

- INTRODUCTION
- GEOMETRIC TOLERANCE
- SYMBOLS
- STRAIGHTNESS
- FLATNESS
- ROUNDNESS
- CYLINDRICITY
- PROFILE
- ANGULARITY
- PERPENDICULAR
- PARALLELISM
- CONCENTRICITY
- POSITION
- RUN OUT

Geometrical Symbols

- PERPENDICULAR
- PARALLELISM
- CONCENTRICITY
- POSITION
- RUN OUT

Runout control the location of a circular feature relative to its axis. Again it is a composite tolerance controlling cylindricity, and concentricity. Runout is applied to circular elements of a surface of revolution or a planar surface.



Heat Treatment

- Heat treatment
- Hardening
- Heating
- Soaking
- Cooling
- Through Hardening
- Case Hardening
- Carburizing

Carburizing is the process of adding Carbon on the Surface / Skin (Case) of the material which has very low Carbon presence.Case Hardening is called in other way as Surface Hardening. Flame Hardening, Nitriding and Induction Hardening are some other kind of Surface Hardening. These types of Hardening are done on some specific area of the part. This is called as Local Hardening also.

- Nitriding
- Tempering

MATERIAL & APPLICATION

- Cast Steel

Through Hardening Steel

- EN8
- EN24

Material	:EN24
Application	:Moving Parts Like Guide Bush and Guide Pin
Heat Treatment	:Through Hardening
Achievable Hardness	:40-45 HRc
Special Note (If any)	:This material has more nickel and chrome. So rusting of components gets late. Too shiny and gets good surface finish.

- EN31

NDT

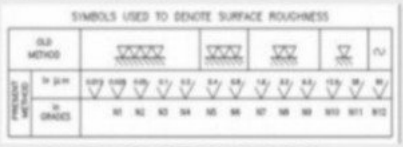
- NDT
- Common NDT Methods Volumetric Exa...
- Radiography Testing -RT

adiography uses an x-ray device or radioactive isotope s a source of radiation which passes through the aterial and is captured on film or digital device. After rocessing the film an image of varying density is btained. Possible imperfections are identified through ensity changes.

- Surface Examination Method Visual Ins...
- Liquid Penetrant Testing -LPT or PT
- Magnetic Particle Testing -MT
- Eddy Current Testing -ET
- Integrity Examination Method Leak Tes...
- Acoustic Emission Testing-AET
- Condition Monitoring Method Thermog...
- Vibration Analysis - VA

Surface Roughness

The term Surface Roughness refers the Surface Quality of the Part.
It is denoted by Ra Value.
In older periods, the Surface Roughness was denoted by Symbols and grades.



ACHIEVEABLE SURFACE ROUGHNESS

Ra Values in Microns

	Manufacturing Process	With Difficulty	Normally	Rough
CASTING	Sand casting	0.8 - 1.6	6.3 - 12.5	12.5
	Permanent mould	0.8 - 1.6	1.6 - 6.3	
	Die casting	0.8 - 1.6	0.8 - 3.2	
FORMING	Forging	1.6 - 3.2	3.2 - 25	
	Extrusion	0.4 - 0.8	0.8 - 6.3	
	Rolling	0.4 - 0.8	0.8 - 3.2	
MANUAL	Flame Cut		25 - 50	
	Hacksaw Cut		6.3 - 50	
	Bandsaw, Chipping		3.2 - 50	
	Filing	0.8 - 1.6	1.6 - 12.5	
	Emery Polish	0.1 - 0.4	0.4 - 1.6	1.6 -
SURFACE PROCESS	Shot Blast	1.6 - 3.2	3.2 - 50	
	Tumbling		0.2 - 12.5	
	Abrasive Belt		0.1 - 6.3	
	Fibre Wheel Brushing	0.1 - 0.2	0.2 - 0.8	0.8

MINDSET OF ENGINEERING STUDENTS AFTER EDUCATION

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PCD Calculator

PCD	200
No of Holes	8
Starting Angle	0
Origin X	250
Origin Y	150

Clear | Calculate

Co-Ordinates

S.No	X	Y
1	350.000	150.000
2	320.711	220.711
3	250.000	250.000
4	179.289	220.711
5	150.000	150.000
6	179.289	79.289
7	250.000	50.000
8	320.711	79.289

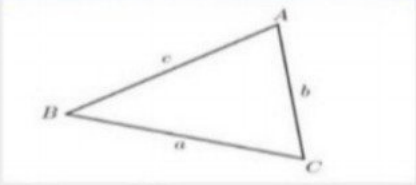
Tolerance Calculator

Nominal Size	46.63
Tolerance Grade	H7

Clear | Calculate

Designation	46.63 H7
Holes Upper Deviation	0.025 mm
Holes Lower Deviation	0.000 mm
Maximum Hole Size	46.655 mm
Minimum Hole Size	46.630 mm

Triangle Calculator



Value of A :	35.81
Value of B :	50.76
Value of C :	93.43
Value of a :	34
Value of b :	45
Value of c :	58
Perimeter	**137.00**
Area	**763.63**

Clear | Calculate

Weight Calculation

Material Shape	Rectangular Flat or Plate
Length (L) in mm	165
Width (W) in mm	75
Thickness (T) in mm	20
Material	Steel

Clear | Calculate

Weight in Kg : 1.943

Standard Tables

- TOLERANCES - Holes
- TOLERANCES - Shaft
- General Tolerance
- Ra Table
- Tap Drill (Metric-Standard)
- Tap Drill (Metric-Fine Pitch)
- Tap Drill - British Standard (BS)
- SWG to mm
- Hardness Conversion Table

Hardness Conversion Table

BHN Std Ball (HB)	BHN Tungsten Ball (HB)	Rockwell HRC	Tensile St mp
111			3
116			4
121			4
124	124		425
133	133		455
143	143		490
152	152	0	515
162	162	3	545
171	171	6	580
181	181	8.5	605
190	190	11	635
200	200	13.4	670
209	209	15.7	695
219	219	18	730
228	228	20.3	765
233	233	21.3	780
238	238	22.2	795
243	243	23.1	805
247	247	24	825
252	252	24.8	840
256	256	25.6	855
261	261	26.4	875
265	265	27.1	890
270	270	27.8	905
275	275	28.5	915
280	280	29.2	935
284	284	29.8	950
294	294	31	980
303	303	32.2	1005
313	313	33.3	1035
322	322	34.4	1070
331	331	35.5	1095
341	341	36.6	1130
350	350	37.7	1170

MINDSET OF ENGINEERING STUDENTS AFTER 2 YEARS

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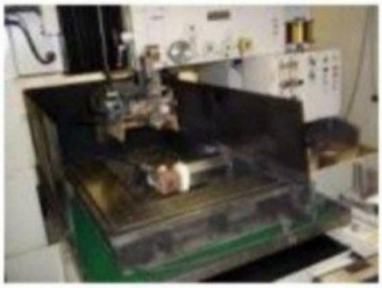

MINDSET OF PARENTS OF ENGINEERING STUDENTS

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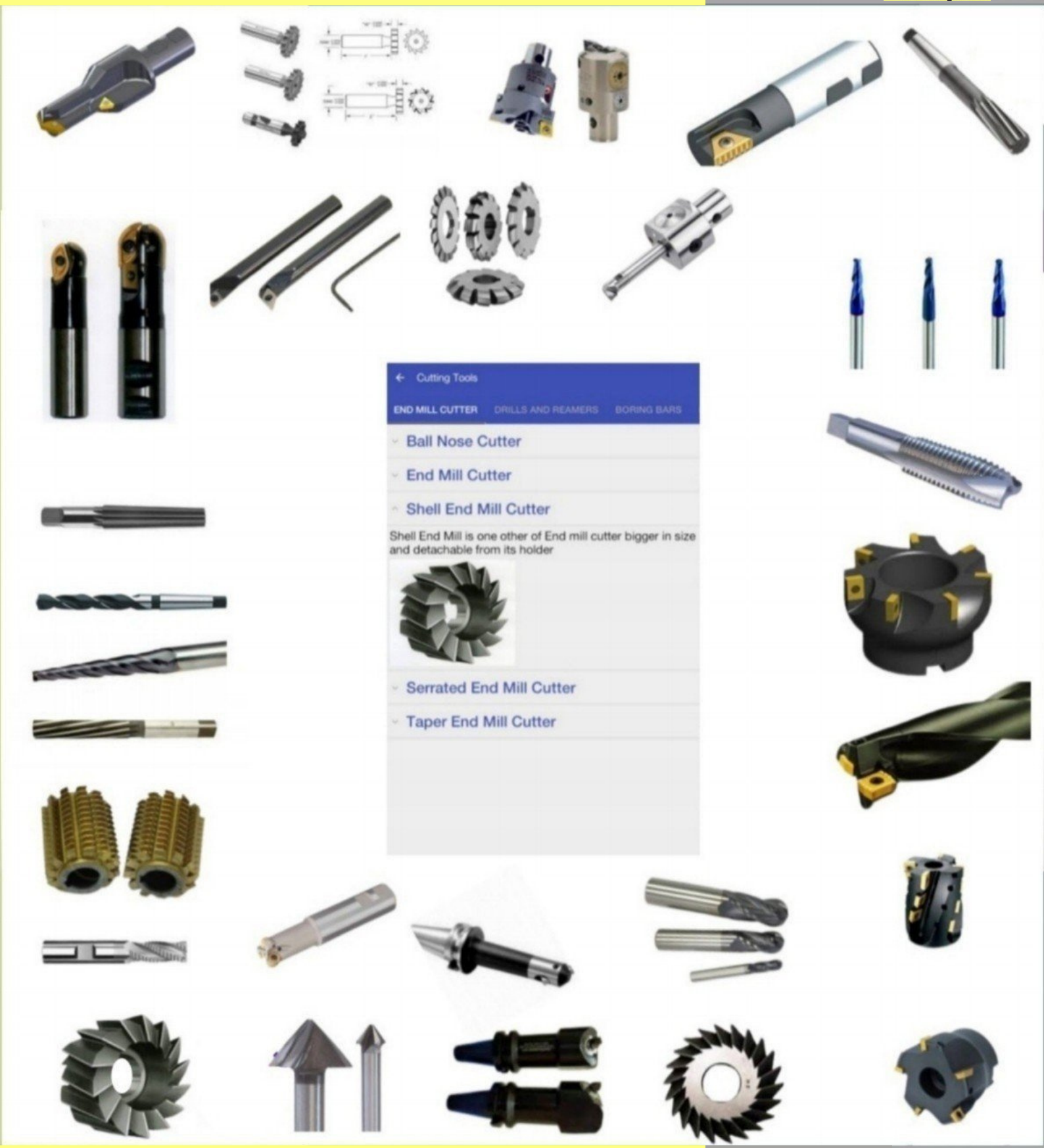

KIND ATTENTION PARENTS OF ENGINEERING STUDENTS

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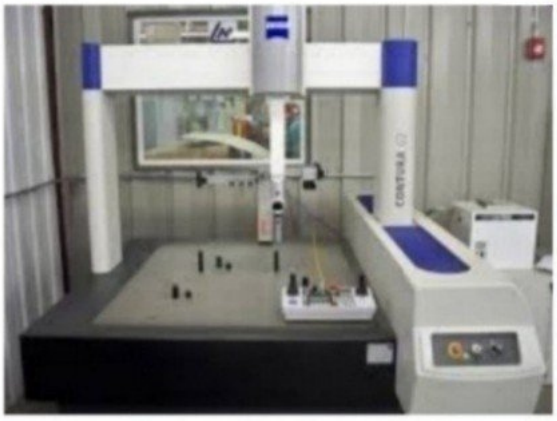

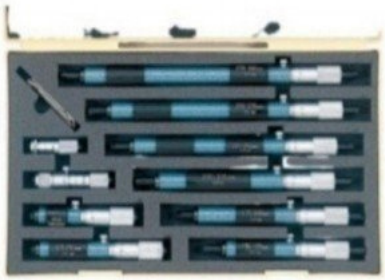

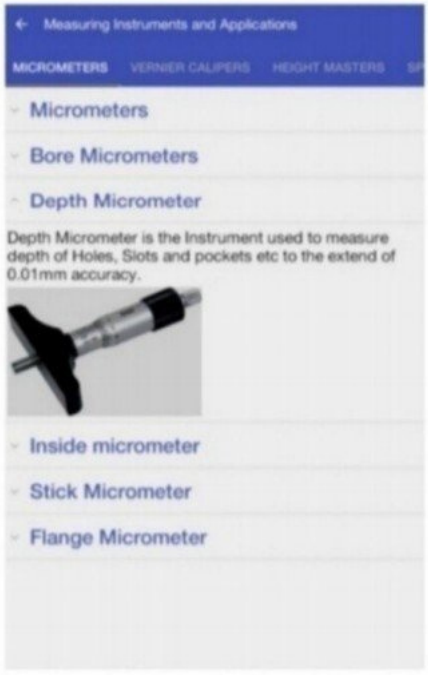

DETAILS ABOUT - MST4ME

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Training workshop

for Final Year Engg & Dip Students,
Freshers, Job seekers, Industrial Trainings
Online by
ZOOM 1 Hour / Day for 10 Days

Area Covered

- Day 01 – Engineering Drawing
- Day 02 – Engineering Calculation
- Day 03 – Fits & Tolerances
- Day 04 – Material & Application
- Day 05 – Heat Treatment
- Day 06 – Welding & NDT
- Day 07 – Surface Coating
- Day 08 – Machineries
- Day 09 – Cutting Tools
- Day 10 – Measuring Instruments

Our Special Training Programs

Designing Courses
Tool Engineering (Tool Room Training)
Process Engineering
Production Engineering
Industrial Engineering
Quality Engineering

We also do FDP(Faculty Development Programs) on our trainings

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Special Training

Designing Courses

Jigs, Fixtures Design
Drilling Jig
Milling, Turning, Grinding, Welding Fixture
CNC Turning, VMC, HMC, VTL Fixtures

Press Tool Design
Blanking Tool
Piercing Tool
Forming Tool
Progressive Tool
Compound Tool
Combination Tool

Mould & Die Design
Plastic Mould
Pressure Die Casting
Gravity Die Casting
Pattern

Tool Engineering
Tool Design
Sequence of process
Angular Machining
Tooling Hole
Mating Parts
Mating Dimensions
Assembly
Trial

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Special Training

Production Engineering

Micro level Time Study
Cycle Time reduction
5S implementation
Kaizen implementation Process
elimination
Stop Share
Process clubbing

Process Engineering

Process
Machine
Fixture
Cutting Tool
Instruments
Gauges
Cutting Parameters
Process Time
Cycle Time
Stop Share
Job Setting, Clamping
Inspection, Reasons for Rework & Rejection

Industrial Engineering

Basic Engineering
Process Engineering
Process Planning
FMEA
Design of Tools & Gauges
Design validation, Prototyping
Procurement of Tools & Gauges
Control Plan, Production
Planning & Inventory planning

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We are willing to give our App to your Engineering College in YOUR BRAND NAME & LOGO on WHITE LABEL Basis. So that your students will become employable in CORE industries.

Our other Tools on White Label

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- Advanced Machining Cost Estimator Software(AMACE)

We provide 3 days class room training in colleges for a batch of 50 students on Basic Engineering.

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