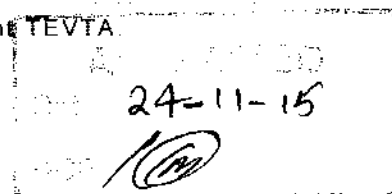


TRAINING OBJECTIVES:

- To train about the basic concept of forging.
- To train about the art of technology in respect of forging, its inspection, & quality control.
- To produce need based skilled manpower, equipped with latest techniques and advanced technical know-how in forging.
- To train about the vacuum that already exists in this specialized field of study.

CURRICULUM SALIENT:

Name of the Course	:	“Inspection & Testing in forging”
Entry level	:	Middle and above
Duration of course	:	6-Months.
Total training hours	:	800 hours.
Training hours per week	:	40 hours
Training Methodology	:	Practical 80 % Theory 20 %



SKILL COMPETENCY DETAILS: -

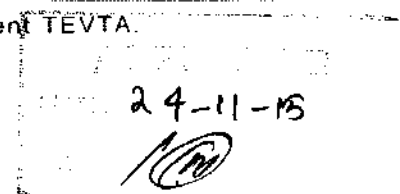
On the successful completion of the course, the trainee would have attained the following skills;

- Perform the Inspection and testing skills
- Maintain the data recording, analysis and formation of results
- Control the quality of the process during production
- Implement corrective and preventive actions during problems
- Perform all types of inspections (visual and instrumental inspection)
- Use all inspection instruments and gauges.

KNOWLEDGE PROFICIENCY DETAILS: -

After the successful completion of the course, the trainee would have attained following knowledge;

- Basic knowledge of Inspection and quality control
- Knowledge about all gauges and instruments use during inspection
- Understanding of all types of visual and instrumental inspections for maintaining quality



CURRICULUM DELIVERY STRUCTURE

	Course Delivery	Co Curricula Activities / Vacations	Revision & Final Test	Total
Week	1-20	21-24	26	26
	20	4	2	

24-11-15

SCHEME OF STUDIES

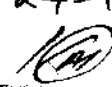
Inspection and Testing in Forging
06 Month Course

Sr #	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1.	Introduction to inspection and testing	10	40	50
2.	What is quality control and inspection	8	40	48
3.	Forging process equipment's and accessories	12	60	72
4.	Forging operations	16	60	76
5.	Inspection instruments for forging operations	12	50	62
6.	Inspection techniques in forging	8	46	54
7.	Quality control in forging	8	50	58
8.	How to read forging drawings	12	55	67
9.	How to read and fill in process inspection sheets	12	50	62
10.	Health and safety	12	45	57
11.	5S implementation	18	52	70
12.	Introduction to Kaizen	12	52	64
13.	Functional English	20	20	40
14.	Work Ethics	-	20	20
	Total	160	640	800


DETAIL OF COURSE CONTENTS

Inspection and Testing in forging
06 Month Course


Sr #	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1	Introduction to inspection and testing 1.1 Definition 1.2 Visual inspection 1.3 Geometrical inspection 1.4 Mechanical characteristics inspection	10	40	50
2	What is quality control & Inspection 2.1 Definition of Quality 2.2 Difference between Quality Control and Inspection	8	40	48
3	Forging Process equipment and accessories 3.1 Presses 3.2 Hammers 3.3 Furnaces 3.4 Tooling's 3.5 Coolants	12	60	72
4	Forging Operations 4.1 Cutting 4.2 Heating 4.3 Forging 4.4 Trimming 4.5 Stamping	16	60	76

24-11-15


5	<p>Instruments for forging Inspection</p> <p>5.1 Instruments</p> <p>5.2 Gauges</p> <p>5.3 Other Equipment's</p> <p>5.4 How to use instruments and gauges</p>	12	50	62
6	<p>Inspection techniques in forging</p> <p>6.1 In process Inspection</p> <p>6.2 Pre-final inspection</p> <p>6.3 Final inspection</p>	8	46	54
7	<p>Quality control in forging</p> <p>7.1 Process setup Quality</p> <p>7.2 Tooling Quality</p> <p>7.3 Operations Quality</p>	8	50	58
8	<p>How to read Forging Drawings</p> <p>8.1 Introduction to engineering drawing</p> <p>8.2 Forging drawing</p>	12	55	67
9	<p>How to read and fill Inspection sheets</p> <p>9.1 In process Inspection sheets</p> <p>9.2 Final Inspection sheets</p> <p>9.3 Final Summary of the Process</p>	12	50	62
10	<p>Health and safety</p> <p>10.1 Meanings of safety</p> <p>10.2 Importance of health and safety</p> <p>10.3 Use of PPEs</p> <p>10.4 Awareness of using accident safety</p>	12	45	57

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	equipment's			
11	5-S Implementation 11.1 Introduction to 5S 11.2 Importance of 5S 11.3 Implementations of 5S on shop floor	18	52	70
12	Introduction to Kaizen 12.1 Introduction to Kaizen 12.2 Concept of Quality Circles 12.3 Importance of Kaizen	12	52	64
13	Functional English	20	20	40
14	Work Ethics	-	20	20
	Total	160	640	800

24-11-15


LIST OF PRACTICAL:

- Making setup inspection of parts
 - Visual inspection
 - Dimensional inspection using VC
 - Dimensional inspection using Position fixture
 - Hardness inspection using Brinell hardness tester
- In process inspection as per defined frequency
- Perform following Forging operations:
 - Cutting
 - Heating
 - Forging
 - Trimming
 - Stamping
- Practice Inspection techniques in forging
 - In process inspection
 - Pre-final inspection
 - Final inspection
- To make the forging drawings


LIST OF LABS:

- Metrology Lab
- Material Testing Lab
- Foundry Lab
- Metal Shop

LIST OF TOOLS, MACHINERY & EQUIPMENT

(For The Class of 25 Students)

Sl. No.	Nomenclature of Equipment/Tools	Quantity Per Person
1.	Vernier Caliper (Analog Type)	25, Range: (0~200 mm)
2.	Vernier Caliper (Analog Type)	25, (0~400 mm)
3.	Depth gauge	25, (0~200 mm)
4.	Protractor	25, (0~180 degree)
5.	Cylinders set	05 set per team
6.	Clip board	25
7.	Safety Helmet	25
8.	Goggles	25
9.	Safety Shoes	25 pair
10.	Gas Fire Heating Furnace	01
11.	Forging Press (500T)	01
12.	Forging Press (200T)	01
13.	Neumatic hammer	01
14.	Pre heating Gas Stoke	01
15.	Steel tongue	05

Date: 24-11-15
 Sign: 

LIST OF CONSUMABLES

(For The Class of 25 Students)

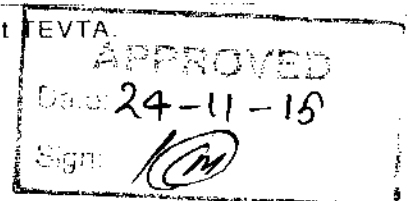
Sr. No.	Consumable Items	Quantity Per Person
1.	Leather Gloves	25 Pair per week
2.	Masks (if cloth type)	25 per week
3.	Lubrication Oil	as per requirement
4.	Die calont	as per requirement
5.	Ear Plugs	50

MINIMUM QUALIFICATION OF INSTRUCTOR

B. SC Engineering in Mechanical/Metallurgy Engineering/B.Tech (Hons)

Or

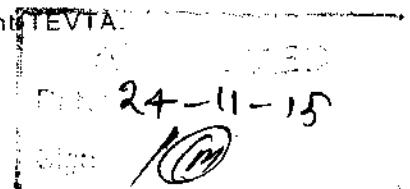
3 year Diploma in mechanical (with 3-4 years practical experience



EMPLOYABILITY OF PASS-OUTS

The pass outs of this course may find job / employment opportunities in the following areas / sectors: -

- Metal working industries (like forging or casting)
- Any automobile manufacturing company or its vendors
- Foundries
- Steel Mills
- Any other industry which involved in manufacturing process (like machining, heat treatment etc.)



REFERENCE BOOKS

- “Fundamentals of modern manufacturing” By M. P. Groover
- “Measurement & Instrumentation” By Allan S. Morris
- “Kaizan” (Ky ‘ zen) By Masaaki Imai
- “Metals Handbook” Volume 9 (Mechanical Testing)

CURRICULUM EVALUATION COMMITTEE

Mr. M. Tariq Mehmood khan

Sr. Instructor Mechanical

GCT Railway Road Lahore.

(Convener)

Mr. Saeed Tahir,

Instructor Mechanical

GCT Railway Road Lahore

(Member)

