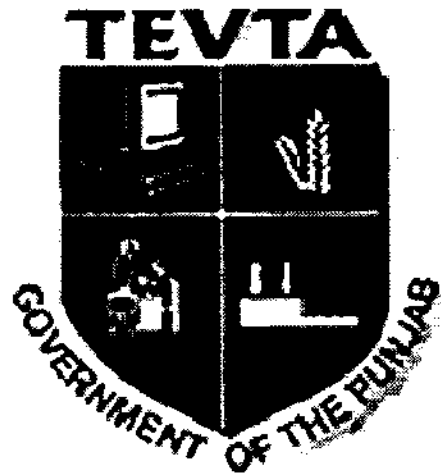


GOVERNMENT OF THE PUNJAB

TECHNICAL EDUCATION & VOCATIONAL TRAINING AUTHORITY



CURRICULUM FOR

Forging Shop Operator

(6 – Months Course)

Evaluated November 2015

CURRICULUM SECTION
ACADEMICS DEPARTMENT

96-H, GULBERG-II, LAHORE

Ph # 042-99263055-9, 99263064

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Approved

24-11-15

[Signature]

TRAINING OBJECTIVES:

- To train about the basic concept of forging shop.
- To train about the art of technology in respect of forging shop, its operation, production & 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	:	“Forging shop Operator”
Entry level	:	Primary and above
Duration of course	:	6-Months.
Total training hours	:	800 hours.
Training hours per week	:	40 hours
Training Methodology	:	Practical 80 % Theory 20 %

Date: 24-11-15
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SKILL COMPETENCY DETAILS: -

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

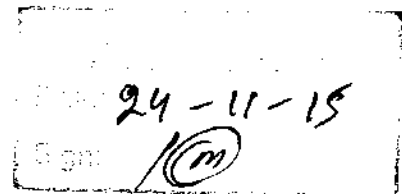
- perform different forging process
- Use of forging equipment's
- Prepare the Typical Process Flow and Operation Control of forging
- Implementation of 5s on shop floor

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KNOWLEDGE PROFICIENCY DETAILS: -


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

- Understand the concept of forging and different forged components
- Recognize with the advantages & disadvantages of forging
- Drafting of forging drawings
- Understand the techniques of inspection and quality control
- Awareness of occupation health & safety standards



CURRICULUM DELIVERY STRUCTURE


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

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SCHEME OF STUDIES


**Forging Shop Operator
(06 Month Course)**

Sr #	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1	Introduction of Forging	10	24	34
2	Types of Forging	18	50	68
3	Advantages and disadvantages of forging	8	40	48
4	Forging Equipment's	9	40	49
5	Tools and dies	15	50	65
6	Forging die coolants	9	40	49
7	Typical Process Flow	10	50	60
8	Operational Control	11	51	62
9	Drawing Study	8	40	48
10	Quality Control	10	45	55
11	Maintenance Techniques	8	50	58
12	Occupational health and safety	8	40	48
13	5S Implementation	8	40	48
14	Introduction to Kaizen	8	40	48
15	Functional English	20	20	40
16	Work Ethics	-	20	20
Total		160	640	800


24-11-15


DETAIL OF COURSE CONTENTS
 Forging Shop Operator
 (06 Month Course)


Sr #	Main Topics	Theory Hrs.	Practical Hrs.	Total Hrs.
1	Introduction of Forging 1.1 Definition of forging 1.2 History of forging 1.3 Examples of forged components	10	24	34
2	Types of Forging 2.1 Open die forging 2.2 Close die forging 2.3 Classifications of forging process 2.3.1 According to temperature 2.3.2 According to tooling 2.3.3 According to equipment	18	50	68
3	Advantages disadvantages of Forging 3.1 Mechanical Properties 3.2 Economy of process 3.3 Tooling Problems	8	40	48
4	Forging equipment's 4.1 Furnaces 4.2 Hammers 4.3 Presses 4.4 Other equipment's present in the facility	9	40	49
5	Tools and Dies 5.1 Dies used in forging	15	50	65

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	5.2 Tooling of forging process 5.3 Materials and their grades			
6	Forging Die Coolants 6.1 What are coolants 6.2 Types of coolants 6.3 Application	9	40	49
7	Typical Process flow 7.1 Cutting 7.2 Heating 7.3 Forging 7.4 Trimming	10	50	60
8	Operational Control 8.1 Heating 8.2 Pre forging 8.3 Forging 8.4 Stamping	11	51	62
9	Drawing study 9.1 Introduction to Engineering Drawing 9.2 Basics of forging Drawings 9.3 Interpretation of forging drawing	8	40	48
10	Quality Control 10.1 Definition of quality 10.2 Inspection techniques 10.3 Use of Gauges and Measuring instruments 10.4 In process Inspection	10	45	55

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 Sign: 

	10.5 Final inspection			
11	Maintenance Techniques 11.1 Meanings of Maintenance 11.2 Types of maintenance 11.2.1 Corrective Maintenance 11.2.2 Preventive maintenance 11.2.3 Predictive maintenance	8	50	58
12	Occupational health and safety 12.1 Meanings of safety 12.2 Importance of occupational H & S 12.3 Use of PPEs 12.4 Awareness of using accident safety equipment's	8	40	48
13	5S Implementation 13.1 Introduction to 5S 13.2 Importance of 5S 13.3 Implementations of 5S on shop floor	8	40	48
14	Introduction to Kaizen 14.1 Introduction to Kaizen 14.2 Concept of Quality Circles 14.3 Importance of Kaizen	8	40	48
15	Functional English	20	20	40
16	Work Ethics	-	20	20
Total		160	640	800

APPROVED
 Date 24-11-15
 SIGN 

LIST OF PRACTICAL:

- Perform the Furnace Heating Process
- Implement Forging Die Preheating
- Steel Blank heating up to required temperature
- Preforming (Hammering)
- Blocking of work piece
- Final Forging of the specimen
- Die cooling using die coolants
- Trimming of the work piece
- Hot stamping
- In process Inspection

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LIST OF LABS:

- Foundry Lab
- Metal Shop

LIST OF TOOLS, MACHINERY & EQUIPMENT

(For the Class of 25 Students)

Sr. No.	Nomenclature of Equipment/Tools	Quantity
1.	Safety Helmet	25 (01 Per Person)
2.	Goggles	50 (02 Per Person)
3.	Ear Plugs	50 (02 Per Person)
4.	Safety Shoes	25 Pairs
5.	Vernier Caliper (Analog Type)	25 (0~200 mm)
6.	Gas Fire Heating Furnace	01
7.	Neumatic hammer (100 ~ 150) kg	01
8.	Forging Press (500 T)	01
9.	Forging Press (200 T)	01
10.	Preheating Gas stove	01
11.	Steel tongue	04
12.	Coolant spray gun	02
13.	Moving conveyers	03

LIST OF CONSUMABLES

Sr. No.	Consumable Items	Quantity
1.	Leather Gloves	25 (01 Per Person)
2.	Mask (if cloth type)	25 Per Week
3.	Blank Material Pieces	As per Requirement
4.	Die Coolants	As per Requirement
5.	Lubrication Oil	As per Requirement

MINIMUM QUALIFICATION OF INSTRUCTOR

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

Or

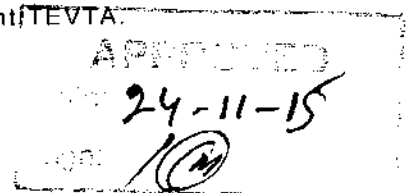
3 year Diploma in mechanical (with 3-4 years practical experience)

EMPLOYABILITY OF PASS-OUTS

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

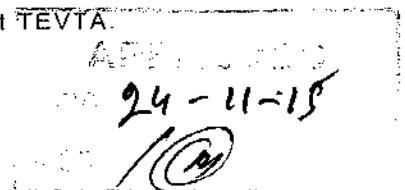
Graduates of this course will get employment in the following Industrial Arena;

- Surgical Instrument Industry
- Automobile Industry
- Petrochemical Industry
- Manufacturing Industry etc.



REFERENCE BOOKS

- “Degarmo’s Materials and processes in manufacturing” By De-Garmo
- “ASM Handbook of forging” By American Society of Metallurgists
- “Fundamentals of modern manufacturing” By M. P. Groover
- “Metalworking: Bulk Forming” By S. L Semiatin
- “Forging Design Handbook” By Sheridan S. A
- “Cold and Hot Forging: Fundamentals and Applications” By Altan, T., Ngaile, G., & Shen, G.



CURRICULUM EVALUATION COMMITTEE

Mr. M. Tariq Mehmood khan

Sr. Instructor Mechanical

GCT Railway Road Lahore.

(Convener)

Mr. Atif Attique

Instructor Mechanical

GCT Railway Road Lahore

(Member)