

CURRICULUM

FOR THE TRADE OF

JEWEL SMITH

UNDER

APPRENTICESHIP TRAINING SCHEME



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

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2. BACKGROUND

1.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate (ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

1.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

1.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.

3. RATIONALE

(Need for Apprenticeship in **JEWEL SMITH** trade)

The Gems and Jewellery sector plays a significant role in the Indian economy, contributing around 6-7 per cent of the country's GDP. One of the fastest growing sectors, it is extremely export oriented and labour intensive.

Based on its potential for growth and value addition, the Government of India has declared the Gems and Jewellery sector as a focus area for export promotion. India is deemed to be the hub of the global jewellery market because of its low costs and availability of high-skilled labour. India is the world's largest cutting and polishing centre for diamonds, with the cutting and polishing industry being well supported by government policies. Moreover, India exports 95 per cent of the world's diamonds, as per statistics from the Gems and Jewellery Export promotion Council (GJEPC).

India's Gems and Jewellery sector has been contributing in a big way to the country's foreign exchange earnings (FEEs). The Government of India has viewed the sector as a thrust area for export promotion.

Due to shortage of skilled manpower, the Gems and Jewellery Skill Council of India is planning to train over four million people till 2022. The council aims to train, skill and enhance 4.07 million people by 2022.

4. JOB ROLES: REFERENCE NCO

Brief description of Job roles:

Jewellery, Engraving and Precious Metal Working identification and processing of jewels, making and engraving metal ornaments, inlaying metal pieces, etc., and ensures desired finish with minimum wastage. Examining, selecting cutting and processing real and artificial pearls and stones according to design or customer's specifications. Selects artistic designs for engraving inlaying or embossing metals, other than ornaments, and workers to reproduce them on articles for sale, decoration or display. Checks purity of gold and silver to determine value of used or new ornaments. May be experienced or specialized in any particular type of work and be designed accordingly. May assist customers in selecting pearls and jewels, and determining design or ornaments to be made.

Work as a Jewelry Designer or CAD Operator as well working as a CAM machine operator, diamond assorter , gem lab assistant or store manager to keep inventory of tools and equipment and machinery. Even working with self entrepreneur.

Jewellery, Goldsmith and Silversmith Workers, other include all jewellery and precious metal workers not elsewhere classified.

Reference NCO: **7318.30, 7313.90**

5. GENERAL INFORMATION

1. **Name of the Trade** : **JEWEL SMITH**
2. **N.C.O. Code No.** : **7318.30,7313.90**
3. **Duration of Apprenticeship Training (Basic Training + Practical Training):**15 Months

3.1 For Fresher's:- Duration of Basic Training: -

Block –I: 3 months

Total duration of Basic Training: 3 months

Duration of Practical Training (On -job Training): -

Block–I: 12 months

Total duration of Practical Training: 12 months

4. **Entry Qualification** : Passed 8th Class Examination under 10+2 System of Education or its equivalent

5. **Selection of Apprentices:** The apprentices will be selected as per Apprenticeship Act amended time to time.

6. **Rebate for ITI passed trainees** : Nil

Note: Industry may impart training as per above time schedule, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspect is compromised and duration of industry training to be remain as 1 year.

6. COURSE STRUCTURE

Training duration details: -

Time (in months)	1-3	4-15
Basic Training	Block– I	-----
Practical Training (On - job training)	----	Block – I

Components of Training	Duration of Training in Months														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Basic Training Block - I															
Practical Training Block - I															

7. SYLLABUS
7.1 BASIC TRAINING
(BLOCK – I)
DURATION: 03MONTHS

GENERAL INFORMATION

- Name of the Trade** : **JEWEL SMITH**
- 1) **Hours of Instruction** : 500 Hrs.
- 2) **Batch size** : 20
- 3) **Power Norms** : 6 KW
- 4) **Space Norms** : 80 Sq.m.
- 5) **Examination** : The internal assessment will be held on completion of the Block.
- 6) **Instructor Qualification** :

- i) Gold Smith NCVT Trade Certificate Holder with 03 (Three) Years' Experience in the relevant field.
- OR**
- ii) Degree in any field from recognized university with one year post qualification experience in the relevant Field.
- OR**
- iii) Traditional Jewel Smith with 10th Pass & 05 (five) year experience in the relevant field.

- 7) **Tools, Equipments & Machinery required** : - As per Annexure – I

7.1 DETAILSYLLABUS OF BASIC TRAINING

7.1.1DETAIL SYLLABUS OF PROFESSIONAL SKILLS & PROFESSIONAL KNOWLEDGE

Block –I

Basic Training

Week No.	Professional Skills& Basic numeracy (270 Hours)	Professional Knowledge(120 Hours)
1	Practice on – a. Refining of Gold & alloying conversion from 24 Kt to 22 Kt and other varieties. b. Refining gold & alloys/scrap using Aqua Regea Process.	Safety & Housekeeping, Chemical hazards involved due to lead etc. familiarization of 14-18 Karat Gold. Purity of Gold in terms of testing & measuring methods of Karats of fineness, Hall marking. Different alloy composition and properties – physical and chemical. Spur is 1417.
2-3	Practice on Recovery of Gold to 999 Fineness with minimum losses – a. Recovery of precious metal from dust. b. Chemical Refining Process	Different joining process, screw – filing, soldering, brazing, welding, composition of soldering alloy, flux etc.
4-5	Practice on Finishing, Polishing & Repairing – a. Finishing, cutting, Pre-polishing, Poetizing b. Hand Polishing and Burnishing c. Motor polishing and Buffing d. Thumbling and magnetic Polishing techniques e. Ultrasonic clearing and Steam cleaning f. Use of different Brushes, Felt laps, Cotton buffs, Grinding wheels etc.	Art of value – addition, methods of polishing – manual & by machine, electro-chemical means. Abrasive & non-abrasive media. Equipment – rotary – barrel or tumbler, vibratory barrel, centrifugal planetary barrel, centrifugal disc, magnetic barrel.
6-9	Practice on Basic Goldsmithing and jewellery making skills – a. Filling b. Cutting c. Drilling d. Soldering e. Alloying f. Forging g. Wire drawing h. Sheet Roling i. Red Rolling j. Extruding k. Forging l. Blanking	Finishing process. Smoothing against orange effect traces of flasher burry solder smears. Finishing media & equipment cutting, burnishing. Different compounds, wheels and abrasive devices used in hand finishing operations, vibratory, rotary and centrifugal processes used in mass finishing of jewellery, their suitability for various production requirements, types of media and compounds sued to achieve right finish.

	<p>m. Stamping n. Striking o. Spinning p. Chain making q. Bending r. Raising s. Embossing machining t. Practice on Joining by using 1. Blow pipe techniques 2. Soldering 3. Preparation of solder</p>	<p>Annealing for relieving stress/strain due to bending, overworking etc.</p> <p>Base metal – Ag, Cu, Process of Coating with shinning materials</p> <p>Jewellery designing techniques Country wide variation, difference in man & women jewellery.</p> <p>Different variety of jewellery – Rings, bangles, earring, chain, locket, necklace etc.</p> <p>Filigree work</p> <p>Different Mina work – manipuri, Jaipuri styles</p>
10	<p>Practice of manufacturing shinning.</p> <p>Practice on Engraving</p> <p>Practice on Colour mina working, filigree different mina styles eg. Manipuri, Jaipuri.</p> <p>Practice of annealing potation.</p>	<p>Stamping – process comparison with investment casting process. Typical items produced by stamping. Blanking & coining. Role of tool makers in stampings.</p>
	<p>Practice on electroplating of Gold, alloy, rhodium for decorative applications.</p>	<p>a. Electroplating of Gold, Gold alloy, rhodium and Platinum for decorative applications – basic principles factors, surface preparation b. Electroplating appliances and galvano accessories c. Various types of galvano solutions and their usages d. Types of cathodes and anodes for different metals e. Storage of Chemicals f. Electro polishing for removing unwanted metals from surface of jewellery. g. Safety and precautionary measures and pollution aspect.</p>
11	<p>Practice of different textures and special effects</p>	<p>Types of Enamels : opaque and transparent</p>

		<p>Enameling Kilns and equipments</p> <p>Cloisonné design in colour using basic techniques</p> <p>Developing design in colour using basic techniques</p> <p>Textures and special effects</p> <p>Gilding techniques, Dipping techniques.</p>
	Demonstration and practice on various types of castings.	<p>Introduction to casting Technology and the complete production cycle of casting. What is casting, definition, types of casting & its importance, advantages and disadvantages of various casting procedures, casting technology – its advantages and disadvantages of various casting procedures, casting technology – its advantages and disadvantages, Investing and use of burnout furnace, karat age Control, wax weight to metal weight ratios, burnout procedures, de-waxing techniques, ins & outs of trouble shooting casting problems.</p> <p>Refractory ceramic mould details, common defects in casting. The steps followed in casting investment powder, different types, mixing of investment, timing, de-waxing – stearnvs dry, burn-out of mould – changes in mould material time and temperature control – typical burnout cycles. Safety against little silica powder. Typical casting defects – causes & the art of minimizing</p>
12	Familiarization with different types of stones and practice on stone settings.	<p>Definition of Gemstones, classification, grading, sources of availability, physical & chemical properties. Crystal Structures, economic valuation. Different techniques of stone setting including invisible setting.</p>

		<p>Synthetic (artificial) Gem stones, classification – types, characteristics</p> <p>Evolution of setting, Importance, stone setting tools, like gravers and burs – introduction, description and purpose. Types of cuts – step out and brilliant round cut, Theoretical aspects of invisible setting.</p>
13.	Revision & Internal Assessment 03days	

7.1.2EMPLOYABILITY SKILLS

GENERAL INFORMATION

- 1) **Name of the subject** : **EMPLOYABILITY SKILLS**
- 2) **Applicability** : **ATS- Mandatory for fresher only**
- 3) **Hours of Instruction** : **110Hrs.**
- 4) **Examination** : **The examination will be held at the end of two years Training by NCVT.**
- 5) **Instructor Qualification** :

i)MBA/BBA with two years' experience or graduate in sociology/social welfare/Economics with two years' experience and trained in Employability skill from DGET Institute.

And

Must have studied in English/Communication Skill and Basic Computer at 12th /diploma level

OR

ii) Existing Social Study Instructor duly trained in Employability Skill from DGET Institute.

7.1.2.1 SYLLABUS OF EMPLOYABILITY SKILLS

A. Block – I Basic Training

Topic No.	Topic	Duration (in hours)
	English Literacy	15
1	Pronunciation : Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)	
2	Functional Grammar Transformation of sentences, Voice change, Change of tense, Spellings.	
3	Reading Reading and understanding simple sentences about self, work and environment	
4	Writing Construction of simple sentences Writing simple English	
5	Speaking / Spoken English Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.	
	I.T. Literacy	15
1	Basics of Computer Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.	
2	Computer Operating System Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.	
3	Word processing and Worksheet Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets	
4.	Computer Networking and INTERNET Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of	

	<p>Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cybercrimes.</p>	
	Communication Skill	25
1	<p>Introduction to Communication Skills Communication and its importance Principles of Effective communication Types of communication - verbal, nonverbal, written, email, talking on phone. Nonverbal communication -characteristics, components-Para-language Body - language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort. Case study/Exercise</p>	
2	<p>Listening Skills Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.</p>	
3	<p>Motivational Training Characteristics Essential to Achieving Success The Power of Positive Attitude Self-awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning. Case study/Exercise</p>	
4	<p>Facing Interviews Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview</p>	
5	<p>Behavioral Skills Organizational Behavior Problem Solving Confidence Building Attitude Decision making Case study/Exercise</p>	
	Entrepreneurship skill	15

1	Concept of Entrepreneurship Entrepreneurship- Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. Management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, and The process of setting up a business.	
2	Project Preparation & Marketing analysis Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of Product Life Cycle (PLC), Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.	
3	Institutions Support Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmers& procedure & the available scheme.	
4	Investment Procurement Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.	
	Productivity	10
1	Productivity Definition, Necessity, Meaning of GDP.	
2	Affecting Factors Skills, Working Aids, Automation, Environment, Motivation How improves or slows down.	
3	Comparison with developed countries Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.	
4	Personal Finance Management Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.	
	Occupational Safety, Health & Environment Education	15
1	Safety & Health Introduction to Occupational Safety and Health importance of safety and health at workplace.	
2	Occupational Hazards Basic Hazards, Chemical Hazards, Vibro-acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.	
3	Accident & safety Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.	
4	First Aid Care of injured & Sick at the workplaces, First-Aid & Transportation of sick	

	person	
5	Basic Provisions Idea of basic provision of safety, health, welfare under legislation of India.	
6	Ecosystem Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.	
7	Pollution Pollution and pollutants including liquid, gaseous, solid and hazardous waste.	
8	Energy Conservation Conservation of Energy, re-use and recycle.	
9	Global warming Global warming, climate change and Ozone layer depletion.	
10	Ground Water Hydrological cycle, ground and surface water, Conservation and Harvesting of water	
11	Environment Right attitude towards environment, Maintenance of in -house environment	
	Labour Welfare Legislation	5
1	Welfare Acts Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.	
	Quality Tools	10
1	Quality Consciousness : Meaning of quality, Quality Characteristic	
2	Quality Circles : Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.	
3	Quality Management System : Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.	
4	House Keeping : Purpose of Housekeeping, Practice of good Housekeeping.	
5	Quality Tools Basic quality tools with a few examples	

7.2 PRACTICAL TRAINING (ON-JOB TRAINING)
(BLOCK – I)
DURATION: 12MONTHS

GENERAL INFORMATION

- 1)Name of the Trade** : **JEWEL SMITH**
2)Batch size : a) Apprentice selection as per Apprenticeship

Guidelines

b) Maximum 20 candidates in a group

- 3)Examination** : i) The internal assessment will be held on completion of the block
ii) NCVT exam will be conducted at the end of Apprenticeship Training

4)Instructor Qualification :

- i) Gold Smith NCVT Trade Certificate Holder with 03 (Three) Years' Experience in the relevant field.
OR
- ii) Degree in any field from recognized university with one year post qualification experience in the relevant Field.
OR
- iii) Traditional Jewel Smith with 10th Pass & 05 (five) year experience in the relevant field.

1) Infrastructure for On-Job Training : - As per Annexure – II

7.2.1 BROAD SKILL COMPONENT TO BE COVERED DURING ON-JOB TRAINING

BLOCK – I

1. Safety and best practices (5S, KAIZEN etc.)
2. Record keeping and documentation

DURATION: 12MONTHS (52WEEKS)	
WEEK NO	LIST OF PRACTICAL SKILLS TO BE COVERED DURING ON JOB TRAINING
1.	Electrochemical and chemical polishing
2.	Electro cleaning and electro stripping
3.	Electroforming on metallic and non-metallic models. Electro-eroding , Gilding, Dipping
4.	Basic Metal Work. Preparation and application of enamels. Firing and finishing
5	Designing With CAD Technology.Practice on Master making
6	Practice on wax modeling
7	Practice on alloy preparation and pouring. Practice on preparation of different types of investment. Practice on Casting, Cleaning and Spruce Cutting
8	Practice on packing and vulcanizing rubber molds
9	Practice on mold cutting procedures for various jewellery types
10	Practice with injected waxes. Practice on sprucing techniques and wax tree making. Practice on finishing operations.
11	Practice on Investment casting, mixing of powder water, Degassing & vibrate
12	Practice on topping of & setting, Practice on claw and bezel setting , Practice on pave and channel setting
13	Practice on flush and tension setting , Practice on setting of fancy shape stones , Practice on stone setting
14	Practice on Mounting, Practice on grain setting , Practice on invisible setting
15	Practice on fish tail setting , Practice on casting setting, Practice on prong setting
16	CNC Milling for wax models
17	3D Printing Technology
18	Laser soldering Technology
19	Laser Marking, Engraving
20	Presentation Through Rendering Technology
21	Diamond Grading

8. ASSESSMENT STANDARD

8.1 Assessment Guideline:

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration to be given while assessing for team work, avoidance/reduction of scrape/wastage and disposal of scarp/wastage as per procedure, behavioral attitude and regularity in training.

The following marking pattern to be adopted while assessing:

- a) Weightage in the range of 60-75% to be allotted during assessment under following performance level:

For this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.

In this work there is evidence of:

- good skill levels in the use of hand tools, machine tools and workshop equipment
- Many tolerances while undertaking different work are in line with those demanded by the component/job.
- a fairly good level of neatness and consistency in the finish
- Occasional support in completing the project/job.

b) Weightage in the range of above 75% - 90% to be allotted during assessment under following performance level:

For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.

In this work there is evidence of:

- good skill levels in the use of hand tools, machine tools and workshop equipment
- The majority of tolerances while undertaking different work are in line with those demanded by the component/job.
- a good level of neatness and consistency in the finish
- little support in completing the project/job

c) Weightage in the range of above 90% to be allotted during assessment under following performance level:

For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.

In this work there is evidence of:

- high skill levels in the use of hand tools, machine tools and workshop equipment
- Tolerances while undertaking different work being substantially in line with those demanded by the component/job.
- A high level of neatness and consistency in the finish.
- minimal or no support in completing the project

8.2 FINAL ASSESSMENT- ALL INDIA TRADE TEST(SUMMATIVE ASSESSMENT)

SUBJECTS	Marks	Sessional Marks	Full Marks	Pass Marks	Duration of Exam.
Practical	300	100	400	240	08 hrs.
Trade Theory	100	20	120	48	3 hrs.
Employability Skill	50		50	17	2 hrs.
Grand Total	450	120	570	-	

Note: - The candidate pass in each subject conducted under all India trade test.

9. FURTHER LEARNING PATHWAYS

Employment opportunities:

On successful completion of this course, the candidates shall be gainfully Employed in the following industries:

1. Gems and Jewellery industries
2. Diamond Assorter
3. Production Manager
4. CAD Operator
5. Laser Equipment Operator
6. Entrepreneurship

TOOLS & EQUIPMENT FOR BASIC TRAINING**INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE**

TRADE: JEWEL SMITH

LIST OF TOOLS & EQUIPMENTS FOR 20 APPRENTICES

Manual Jewellery Design		
Sl. No.	Items	Qty
Consumables [Per Student]		
1	Regular Pencil - HB , B , 2B	As required
2	Clutch Pencil - 0.5 MM	As required
3	0.5mm lead	As required
4	Clutch Pencil - 0.3 MM	As required
5	0.3mm lead	As required
6	Rotring Pen - 0.1 MM	As required
7	Compass with clutch pencil - Mapped	As required
8	Transparent pocket files - A4	As required
9	18 bi-colour pencil set - Faber castell	As required
10	Executive bond white paper - A4	As required
11	Alabaster paper 100 Gsm - A4	As required
12	Gateway Paper - A4	As required
13	Eraser	As required
14	Sharpener for pencils	As required
15	Folder	As required
Tool Kit [Per Student]		
16	Set Square 30/60/90 deg - Medium	1 No.
17	Set Square 90/45/45 deg - Medium	1 No.
18	Protractor - Medium	1 No.
19	Ruler - 6" Plastic	1 No.
20	Ruler - 12" Metal	1 No.
21	Stencil - 1815	1 No.
22	Stencil - 18091	1 No.
23	Stencil - 18207	1 No.
24	Stencil - 18206	1 No.
25	Stencil - 1889	1 No.
Jewellery CAD Designing using Rhinoceros		
Sr. No.	Items	Qty

Equipments[Per Student]		
1	Computer with latest configuration	20 Nos.
2	Educational Lab license Software Rhinoceros	1 No.
Diamond Grading		
Sr. No.	Items	Qty
Equipments[Common]		
1	Carat balance	1 No.
2	Sieve size	1 No.
3	Ultra- violer Lamp	1 No.
4	Microscope	5 Nos.
5	LED Television 42"	1 No.
Bench tools, Student kit to be returned by students daily		
1	MM guage	1 No.
2	10x lens	1 No.
3	Locking Tweezer	1 No.
4	selvyt cloth	1 No.
5	Scoop	1 No.
6	Colour grading shade card	1 No.
7	Assortment pad	1 No.
8	Pencil	1 No.
9	0.5mm red ink pilot pen	1 No.
10	0.5mm green ink pilot pen	1 No.
11	pouch for all the items in the kit	1 No.
Consumables[Per Student]		
1	Worksheets for the full program	As required
2	Spiral bound Handout	As required
Consumables[Common]		
1	Camlin Water colors, student grade	As required
2	Medium Solder	As required
3	Lakh	As required
4	Emery Paper, 400	As required
5	Emery Paper, 600	As required
6	Emery Paper, 800	As required
7	Emery Paper, pink	As required
8	Drawing Paper, Quarter Size	As required
9	Fevicol	As required
10	Saw Blades	As required
11	Fevistick	As required
12	Flux	As required
13	Tripoli	As required
14	Rouge	As required
15	Graver With Handle	As required
Rubber mould packing, vulcanizing, moulding, course wax injection and tree making		

Equipments [Common]		
Tools [Common]		
1	Wax Welder	3 Nos.
2	Aluminium Frames	8 Nos.
3	Wax Spatulas	2 Sets
4	Blade Handle	5 Nos.
5	Clamping Device	5 Nos.
6	Acrylic Plates	10 Nos.
7	Investment Flask	6 Nos.
8	Wax Carving Tool Set	2 Sets
9	Acrylic Stand	5 Nos.
Consumables[Per Student]		
1	Rubber Sheets [Castaldo]	As required
2	Wax for Injection [Common]	As required
3	Silicon Spray	As required
4	Surgical Blade No. 11	As required
5	Surgical Blade No. 12	As required
6	Rubber Base [Common]	As required
7	Benzene [Common]	As required
8	Talcum Powder [Common]	As required
9	Cotton [Common]	As required
Casting		
Sr. No.	Items	Qty
Equipments [Common]		
Tools [Common]		
1	Wax Welder	5 Nos.
2	Aluminium Frames	8 Nos.
3	Wax Spatulas	2 Sets
4	Blade Handle	5 Nos.
5	Clamping Device	5 Nos.
6	Acrylic Plates	5 Nos.
7	Investment Flask	6 Nos.
8	Wax Carving Tool Set	2 Sets
9	Tongs for Holding Flask and Crucible	2 Nos.
10	Adapter Plates	2 Nos.
11	Plastic Bucket	1 No.
12	Measuring Cylinder	1 No.
13	Rubber Bowls	2 Nos.
14	Blender	1 No.
15	Acrylic Sand	5 Nos.
Consumables[Per Student]		
1	Rubber Sheets [Castaldo]	As required
2	Wax for Injection [Common]	As required

3	Silicon Spray [Common]	As required
4	Surgical Blade No. 11	As required
5	Surgical Blade No. 12	As required
6	Rubber Base [Common]	As required
7	Benzene [Common]	As required
8	Talcum Powder [Common]	As required
9	Cotton [Common]	As required
10	Rubber Gloves [Common]	As required
11	Silicon Ring	As required
12	Boric Acid Powder [Common]	As required
13	Graphite rod for Stirring [Common]	As required
14	Investment Powder [Common]	As required
15	Dust Mask	As required
16	Plastic Gloves [Common]	As required
17	Masking Tape [Common]	As required
Basic Stone Setting		
Sr. No.	Items	Qty
Equipments & Tools [Per Student]		
1	Grinder [Common]	1 No.
2	Bench Block	1 No.
3	Ring Clamp With Screw	1 No.
4	Ring Clamp With Wedge	1 No.
5	Steel Square	1 No.
6	Center Punch	1 No.
7	Scriber	1 No.
8	Trinangle. Round, Flat Files [2- cut]	1 each
9	Chisel Hammer	1 No.
10	Little Torch kit with Accessories	1 No.
11	Flexible shaft with key	1 No.
13	Table Lamp	1 No.
14	Optivisor	1 No.
15	Tweezer - Straight	1 No.
16	File Cleaning Brush	1 No.
17	Eye glass	1 No.
18	Saw Frame	1 No.
19	Chain nose Piler	1 No.
20	Shellac stick	1 No.
21	Shellac stick Holder	1 No.
22	Polishing stone- Red, Green, Pink	1 each
23	Compressor Hammer	1 No.
24	Micro Flexible Shaft	1 No.
25	Degree Guage	1 No.
Cosumables [Per Student]		

1	Knife Graver	As required
2	Flat Graver	As required
3	Round Graver	As required
4	Double Half round Graver	As required
5	Ball burrs of different sizes	As required
6	Heart burr of different sizes	As required
7	Cup burrs of different sizes	As required
8	Beading tools of different sizes	As required
9	Cross burrs	As required
10	Silver casting pieces	As required
11	Lighter	As required
12	Bees Wax	As required
13	Lakh	As required
14	Black Wax	As required
15	Tooth Brush	As required
16	Powder [Common]	As required
17	Stones of different Sizes	As required
18	Handkerchief	As required
19	Suppari	As required
20	Blue wire, 4mm	As required

Enameling

Sr. No.	Items	Qty
Equipments& Tools [Per Student]		
1	Enamelling Furnace	1 No.
2	Containers	1 Dozen
3	Steel Pallets	15 Nos.
4	Brass wire Brush	1 No.
5	Plastic Trays	1 No.
6	Feeder	1 No.
7	Stainless Steel mesh	2 Nos.
8	Stainless Steel Morter pastel	1 No.
9	Sieves	2 Nos.
10	Scissor	5 Nos.
Consumables[Per Student]		
1	COPPER SHEET 20 guage	As required
2	Enamel colours assorted 10 Shades	As required
3	Enamel colours assorted 10 Shades	As required
4	sable drawing brush, [0,1,3 each]	As required
5	Emwry Sticks	As required
6	Silver	As required
7	Sulphuric Acid	As required

Sr. No.	Items	Qty
Equipments [Common]		

1	Ring Mandrel	4 Nos.
2	Polishing Machine with Dust collector	4 Nos.
3	Ultrasonic Cleaner	2 Nos.
4	Steam Cleaner	2 Nos.
Sr. No.	Items	Qty
Equipments [Common]		
1	Ring Mandrel	4 Nos.
2	Polishing Machine with Dust collector	4 Nos.
3	Ultrasonic Cleaner	2 Nos.
4	Steam Cleaner	2 Nos.
Tools[Per Student]		
1	Drawing Board [Quarter imperial]	1 No.
2	Lakh Stick	1 No.
3	Triangle file, 6"	1 No.
4	Half Round file, 6"	1 No.
5	Saw Frame	1 No.
6	Set Square 30-60	1 No.
7	Set Square 45	1 No.
8	Divider	1 No.
9	Scale	1 No.
10	Protector	1 No.
11	T- Square, Small	1 No.
12	Tweezer Plain	1 No.
13	Soldering Board	1 No.
14	Flux Dish	1 No.
15	Table Lamp	1 No.
16	Bench Peg	1 No.
17	Work Batch	1 No.
1	Camlin Water colors, student grade	5 sets
2	Medium Solder	2 Nos.
3	Lakh	100 Gms
4	Emery Paper, 400	2 Nos.
5	Emery Paper, 600	2 Nos.
6	Emery Paper, 800	2 Nos.
7	Emery Paper, pink	2 Nos.
8	Drawing Paper, Quarter Size	50 Nos.
9	Fevicol	250 Gms
10	Saw Blades	1 Packet
11	Fevistick	3 Nos.
12	Flux	100 Gms
13	Tripoli	1/4
14	Rouge	1/4
15	Graver With Handle	1 No.

B : GENERAL MACHINERY INSTALLATIONS:-

List of Machinery for JEWEL SMITH

Casting Lab

Sr. No.	Particulars of Asset with Function of Machine	y	Purpose
1	Vulcanizer	1	Rubber Mold Making Machine
2	Vacuum Pressure Casting Machine	1	Investment Casting for Jewellery
3	Burnout Furnace	1	Investment Casting Process
4	Melting Furnace		Melting of Gold or Silver
5	Wax Injector	1	making Wax Masters from Rubber Moulds
6	De - Waxing Machine	1	De - Waxing Process for Investment Casting
7	Vibrator Machine	1	Finishing pics with Stainless Steel Balls
8	Heavy duty Vacuum Machine	1	Vacuum in Investment Casting Process
9	Water Jet Machine with stand	1	Casting Process
10	Programmable Temperature Controller	1	Process
11	Steam Cleaning Machine with foot peddle	1	Casting Process
12	Sand Blaster Machine	1	Special treatment Finishing of Product
13	Ultrasonic cleaner Machine	1	Cleaning and finishing of jewellery pieces after aniline and Casting

Jewellery Lab

Sr. No.	Particulars of Asset with Function of Machine	y	Purpose
14	Pen Plating Unit	1	Plating of Small parts with special effects
15	Buffing Machine Two Side	3	Mirror finis to Jewellery Pieces
16	Double side dust collector with heavy motor	1	Collect All dust and material in the workshop
17	Split Lapping Machine with wooden table	1	finis to Jewellery Pieces
18	Pneumatic Hammer with heavy duty airflow and h	1	pieces
19	Pneumatic Sprue cutter with stand and foot padd	1	Cutting Sprue of pieces after investment Casing
20	Belt Grinding Machine for two person	1	finish jewellery pieces as filling process
21	Hydro Welder Machine	6	techniques
22	Flexible shaft Motors	20	jewellery pieces

Material Study Lab

23	Flexible shaft Grinding Machine	2	Mirror finis to Jewellery Pieces
24	Milling & Drilling Machine	1	foundation programme
25	Lathe Machine	1	foundation programme
26	Fret Jig Saw Machine	1	and Metal
27	Bench Grinding Machine	1	sharpening of tools
28	12" Hand Shearing Machine with double side bla	1	making
29	Strip cutting Machine	1	Cutting different size strip for jewellery making
30	Six pass wire drawing machine	1	making six diffrent sizes wires in one operation
31	Wire and sheet rolling machine	1	this machine used for rolling thin the metal sheet
32	Tube forming Machine	1	making tubes from strips for bangle making
33	Universal faceting and Milling Machine	1	bangle making
34	Hydraulic Press	1	using for die cutting and stemping techniques
35	Chain Making Machine	1	using and demonstrate for box chain making

Polishing and Plating Lab

36	Plating)	1	Use for Plating on the Jewellery Pieces
37	Air Compressor	1	use for generating air for different machines
38	Bangle & Ring sizing Machine with dies	1	used for sizing of Bangles and Rings
39	Stamping Machine -Manual Operation	1	Portable stamping for jewellery pieces
40	Magnetic finishing Machine with 0.3mm&0.5mm magnetic pins	2	Finishing and Polishing with magnatic pins
41	Turning machine for ring and bangles	1	Rings
42	Striping Machine	1	finishing on gold pieces
43	Picking unit for finishing	1	Casting
44	Ultrasonic cleaner Machine	1	aniline and Casting
45	Chain Soldering Machine	1	used to Solduring mahine chains

Note: In case of basic training setup by the industry the tools, equipment and machinery available in the industry may also be used for imparting basic training.

INFRASTRUCTURE FOR ON-JOB TRAINING

TRADE: JEWEL SMITH

Actual training will depend on the existing facilities available in the establishments. However, the industry should ensure that the broad skills defined against On-Job Training part (i.e. 12 months) are imparted. In case of any short fall the concern industry may impart the training in cluster mode/ any other industry/ at ITI.

GUIDELINES FOR INSTRUCTORS AND PAPER SETTERS

1. Due care to be taken for proper & inclusive delivery among the batch. Some of the following some method of delivery may be adopted:

- A) LECTURE
- B) LESSON
- C) DEMONSTRATION
- D) PRACTICE
- E) GROUP DISCUSSION
- F) DISCUSSION WITH PEER GROUP
- G) PROJECT WORK
- H) INDUSTRIAL VISIT

2. Maximum utilization of latest form of training viz., audio visual aids, integration of IT, etc. may be adopted.

3. The total hours to be devoted against each topic may be decided with due diligence to safety & with prioritizing transfer of required skills.