CURRICULUM

OF

SIX MONTHS

CERTIFICATE COURSE

IN

SHOE DESIGN

UNDER DEVELOPMENT

INSTITUTE OF RESEARCH, DEVELOPMENT &TRAINING

U.P. KANPUR

Phone -0512-2580360
Fax – 0512-2580360
email – director_ irdt@ rediffmail.com
Website:http://irdt.up.nic.in

Main Features of Curriculum

1. **Title of the course : Shoe Design**
2. **Duration of Course : Six Months**
3. **Type of the course : Full time**
4. **Admission Qualification : 10th Pass**

CURRICULUM
SIX MONTHS
CERTIFICATE COURSE
OF
SHOE DESIGN

SUBJECT

MODULE I 8 WEEKS
1.MATERIAL FOR FOOTWEAR MANUFACTURE
2. FOOTWEAR DESIGN I

MODULE II 8 WEEKS
1.FOOTWEAR DESIGN II
2.COMPUTER APPLICATION

MODULE III 4 WEEKS
1.CAD FOR FOOTWEAR

STUDY & EVALUATION SCHEME
FOR
CERTIFICATE COURSE
SHOE DESIGN

. (Effective from …….)

		PERIOD PER DAY		EXAM SCHEME	
S.No	SUBJECT	THEORY	PRAC	PRAC EXAM DUR	TOTAL MARKS
	MODULE I 8 WEEKS				
1.	MATERIAL FOR FOOTWEAR MANUFACTURE	01	02	03	50
2.	FOOTWEAR DESIGN I	01	02	03	50
	MODULE II 8 WEEKS				
1.	FOOTWEAR DESIGN II	01	02	03	50
2.	COMPUTER APPLICATION	01	02	03	50
	MODULE III 4 WEEKS				
1.	CAD FOR FOOTWEAR	02	04	03	50
	TOTAL 20 WEEKS				250

NOTE: (1) Each period will be of 50 minutes duration.
(2) Each session will be of 24 weeks.
(3) Effective teaching will be atleast 20 weeks.
(4) Remaining periods will be utilised for revision etc.
(5) Emphasis should be on Practical Aspect.
.

MODULE I

1.MATERIAL FOR FOOTWEAR MANUFACTURE

1. **Leather :**Upper Material (Natural and Man Made)Different types of leather,used in shoe manufacturing , their characteristics and properties.
2. **Fabric :**Classification , fabric used for upper lining, side lining, backer, taping , socking, toe puff and their characteristics, use of elastic in footwear.
3. **Rubber :** (Soling Material/ Sole)
   Utility of rubber in shoe industry and types of rubber used in footwear and there identification , characteristics, rubber sole, crepe sole, molded rubber sole micro celluor rubber sole, synthetic and resin rubber soles, Rubber compounding , mixing and vulcanization , polymers.
4. **Fibre Board :**
   Different types of fibre board, classification of leather board, characteristics of different types of leather boards for insole, stiffner toe puf and heel. Utility and use of paper board: Different types of paper board. Insole and types of materials.
5. **Synthetic Material :**
   PVC, PU, TPR poromerics, EVA and Filon materialsm their properties and uses.
6. **Wood and Metal :**
   Wooden and Metallic heels, platform logs and shanks : Types of wood and metal used and their characteristics.
7. **Adhesives :**
   Types of adhesives, basic materials used in formulation of adhesives like starch glue, latex, rubber solution, chloroprene based adhesives polyurethane, reoprere etc. Bonding stregth of adhesives, time of setting comparative study of adhesives available in the market. Selection of adhesives for cemented construction.
8. **Grinderies, Sole and Soling Materials :**
   Eyelets, rivets, hob nails of different heads, pinel pins, tingles made of different metals like iron, brass and their suitability and longevity . Special type of rivets used in selective type of footwear, brass screw, brass and steel staple and their use in footwear spikes used in sport shoes, shank, still toe cap and their use in special type of footwear bottom- filling, material like cement, elastics laces, EVE , Cork sheet, saw dust leather waste, padding materials decorative fittings for footwear, different type of threads use in footwear manufacturing.
9. **Finishing Materials :**
   Creams and waxes of different varieties and their use in formulation of finishing materials like sole polish, heel hand ball , upper dressings, polishes and creams of different colors. Glazing material, lacquers, binders, resins, glazing material such as resin, sundras, shellac and the solvents required for their preparation.

Practical

Identification, physical and chemical properties, testing method, composition selection of all the above items from the market and to know their specification and application.

2.FOOTWEAR DESIGN I

Bone Structure of the leg and foot :

General outline of the foot skeleton, bones, their position description and significant features.

Principles joints and ligaments of the foot. Description of the freely movable joints. The movement of the foot.

Muscular System :

The function of muscles, their origins and insertion balance of power, normal and abnormal balance between muscles. The muscles of leg and foot. The arch of the feet. Description of the longitudinal and transverse arches. The passive and active theory of maintenance, development and growth of bones, the process of classification and growth. Description of the structure of long and short bones.

Distortion of bone.

Skin :

The structure and function of Derims and Epidermis. Effect of pressure and friction of the skin, sweat glands. Outline of the circulatory and nervous systems. Importance of footwear in disorder of the blood and nerve supply. Fittings for some common abnormal conditions. Structural anamolies, some peculiarities of structure their possible role in foot disorders.

Foot Diseases and Abnormalities :

Description and possible causes of hallus valgus and hallux rigidus and footwear suitable for these. Hammer clawed, toes: Description and possible causes of hammer clawed, retracted mallet and rotated toes. Footwear suitable for these conditions.

Flat Feet :

Description and Possible causes, valhus ankles and pronation: condition affecting the long arch. Footwear suitable for these condition.

Other defects :

Corn nail disturbance, chilblins etc. Their causes and footwear suitable for them. Development of foot from infancy to adulthood. Different types of feet such as flashy feet, abnormal feet and deformed feet. Methods of feet measurement stickzesdigraph etc.

(Incorporation of doctors services for study of above topics is required).

Last :

Importance of Last.

Brief description of last making and tools used; Allowances and deductions for last.

(Incorporation of doctors services in manufacture of LAST is required)

Types of Last such as scooped, Hinged, Block Slidomatic . Preparation of the last such as range, twist spring, Pitch etc.

Preparation of insoles and determination of shape, heel height and toe spring for different purposes: measurement of the last in relation to foot measurement i.e. length measurement , in-step measurements, joint measurement , long heel measurement , comparision of foot and last measurement.

Prevailing international sizing systems such as English, French (Paris Point), Stitch (German), Japanese, American, Mondo Point.
Conversion from one scale to another Fittings and multi fittings; plastic last and metal last and their use, advantages and disadvantages.

Practical

1. Foot Measurement
2. Last Measurement
3. Identification of materials used in last making
4. Demonstration of LAST Making
5. Making of foot models using plaster of paris preparing insole patterns from the foot prints and contour patterns from the lasts.

MODULE II

1.FOOT WEAR DESIGN II

1. Definition of Fashion, trends , style, look, motif, flair rhythm. History of fashion cycle, and its periodical evolution.
2. Factors influencing choice of footwear by consumers such as age, sex, comfort, aesthetics, profession/ occupation.
3. Influence of climate in selection of footwear; study of colors and chromatic cycle.
4. Study of material (Natural and man made) feels and texture.
5. Study of components i.e. heels, platform, unit sole, clog etc.
6. Survey of designs in catalogues, periodicals, shop windows and boutiques.
7. Technological factors to be considered in designing footwear such as processes and machinery.
8. Study of construction and knowledge of its look and feet.
9. Selection of last depending upon smartness, comfort and elegance. Designing of last- Basic point of last for designing purpose. Last model making – Last modeling points- standard length, Sheet point, counter point, Tip and Toe, Breast of Heel, Trade time of Last , Types of Bottom plate, Quality of Last materials , Proper Last fitting. Last profile.
10. Location of points on the last (counter, in step, joints and vamp point)
11. Tools and equipment required for designing.
12. making on last (center line, front, back, tread line) chappal and sandal pattern.
13. Preparation of insole and sole pattern of shoes.
14. Preparation of standards and lining standards for various design.
15. Preparation of section pattern for uppers and lining for various design.
16. Oxford, derby, monk, casuals with and without elastic, grescion, ankle boots.
17. Long Boots, Courts shoes.
18. Range building Systems.
19. Principles of grading- Grading Methods i.e. by hand pantograph, geometrical, comparative and radial tools systems. Grinding with the help of computer.
20. Pattern making ; tools and machinery ; shear cutting and binding machine; materials on which the patterns are cut; Storage of patterns.
21. Utilisation of waste materials,cuttings
22. Fiber Board

Practicals

1. Free hand sketching of footwear designs.
2. Color combination exercises.
3. Preparation of leather materials and grindries chart.
4. Preparation of design specification chart.
5. a.Construction of standard for lining,standard,cutting of section patterns and preparation of pullovers for the following designs:Oxford, Derby, Monk
   b.Casuals with and without elastic:Grescion,AnkleBoots,Long BootsCourt shoes
6. Exercise on hand grading and grading using pantograph.
7. Demonstration of Plannimeter to find out production pattern area.
8. Demonstration of graph system to find out correct area of pattern.

2.COMPUTER APPLICATION

1. **Components of the computer :**
   Block diagram of computer, Input and Output devices, Types of software, systems software, Application Software.
2. **Data Presentation** :
   Binary Number Systems, Conversion from decimal to binary, conversion form binary to decimal , octal, hexa decimal, Memory addressing , ASCII, EBCDIC coding systems.
3. **Operating System :**
   i) What is operating systems, multi programming, time sharing and multi tasking.
   ii) Command of DOS, UNIX, LINUX, Windows environment menus of dialogue boxes, concept of ICON, Function of programming, Document
4. **Programming Languages :**
   Concept of programming languages and its classification , Exercise on C/C^{++} language.
5. **Graphics :**
   Page Maker, Coral Draw, CAD
6. **Introduction to Internet :**
   What is Internet . How to send and receive e-Mail and see different types of Web-Sites.

Practical

1. Programming Implementation in C/C^{++}
2. Programming simulation for control operations.
3. Graphics
   A. Practice on Auto-CAD
   B. Coral Draw
4. Practice on Auto -CAD
5. Practice on DOS/UNIX/LINUX/Windows.

MODULE III

1.CAD FOR FOOTWEAR

1. **Principles and Scope of CAD:-** Definition and advantage of CAD. Types of CAD system available . Different types of CAD systems. Digital to analog conversion (DAC) and analog to digital conversion (ADC) . Real coordinates and screen coordinates. Resolution of Screen-video graphics adapter (VGA), SVGA, 2D and 3D coordinates and coordinate extraction. Graphic file formats. Color and fill patterns formats. Primary objects. Shell digitalization standard length and width for a shell. Different size systems increments. Pattern and Rubber band area. Different wastage calculation.

2. **Hardware and Peripherals :-** Computer systems requirements. Basic understanding of the following. Digitizer (2D and 3D), 3D encoder, Scanner, mouse, Plotter (Pen), Cutter (Laser), water and knife and printer (dot matrix, inkjet, laser and bubble jet). Fax modem card and modem. Local and network (LAN) and Wide area Network (WAN). CNC and its application in Last modeling.

3. **Software in CAD :-** Choice of operating system. Structured and non-structured programmes , system software and utilities. Application software like debugging aids, compliers and other utility programming techniques and language, Concepts and applications of F.E.M. (Finite Elements Methods) in footwear.

4. **Pattern Generation/Grading. Costing :-** Mean form digitalization for 2D, last digitalization for 3D. Shell modification . Pattern extraction . pattern marking and allowances. Pattern matching. Grading the shell. Pattern plot out/ cut out. Pattern nesting. Wastage calculation for first wastage, second wastage and third wastage.

5. **Image Processing :-** Principles and Strategies for collection of data for imaging. Data Reduction and processing techniques with special reference to footwear designs.

CAD Practices

1. Digitalization of mean forme.
2. Digitization of Last.
3. Shell Modification.
4. Extraction of patterns from shell.
5. Pattern testing.
6. Grading Pattern
7. Costing of Patterns.

LIST OF TOOLS & EQUIPMENT
(For a Group of 16 Trainees)

1. Drawing Instrument Box 16 sets
2. Scale set card board in case(metric) 16 sets
3. Set square celluloid 45 (250 X 1.5mm) 16 sets
4. Set square celluloid 60 (250 X 1.5mm) 16 Sets
5. French curved (set of 12 celluloid) 16 Sets
6. Drawing Board (700 x500mm) IS 1444 16 nos.
7. Tee- Square (700mm blade) 16nos
8. Steel Rule 300mm (millimeters) 16nos
9. International Standard Pattern 4 nos. each
10. Universal Drafting (1500 x 1000) Machine. 4 nos
11. Compasses 16nos
12. Measuring & Size Tapes 16nos each
13. Diagonal Scale 16nos
14. Drawing Table with corrugated Board (150 x 90 x10cm) 16nos
15. Wooden Geometry Box for Black-Board work 1 set
16. Computer with latest configuration 4 nos.
17. Related Software 1 no.
(4 users)
18. Various types of lasts (wooden, pvc & aluminium) 16 nos. 19. Plotter (A-4 size) 1 no.
20. Different scissors 1 set

LIST OF MACHINES
1. Hand clicking
(a) Knife 4 nos.
(b) Board 4 nos.
2. Grading Machine 1 no.
3. Sharing Machine 1 no.
4. Grinding Machine (Bench) 1 no.

Kindly mail your suggestions/feedback for improvement/development of the curriculum to:-

R.P.Alam
Asst Professor
Institute of Research ,Development & Training,U.P.
Kanpur-208002
E mail:- director_irdt@rediffmail.com