

SYLLABUS
DHTT FIRST YEAR

SUBJECT CODE	NAME OF SUBJECTS	No. of Hrs. Per week	marks		
			Internal	External	Total
1.1	English & Communication skill	3	20	80	100
1.2	Applied Mathematics	3	20	80	100
1.3	Applied Physics	3	20	80	100
1.4	Applied Chemistry	3	20	80	100
1.5	Fibre & Yarn Technology	4	20	80	100
1.6	Weaving Technology & Textile Calculations-I	3	20	80	100
1.7	Fabric Structure-I	3	20	80	100
1.8	Applied Chemistry Practice	3	20	80	100
1.9	Weaving Technology Practice-I	3	20	80	100
1.10	Engineering Drawing (Practice)	3	20	80	100
	Total	34	200	800	1000

1.1 ENGLISH & COMMUNICATION SKILL SYLLABUS

UNIT-1

Grammar Parts of Speech.
Composition: 1. Letter Writing – Personal & Official Letters.
2. Comprehension.

Unit II

Grammar: Nouns, Pronoun, Adjective.
Composition: 1. Letter Writing – Business Letters.
2. Comprehension.

Unit III

Grammar: Verb, Adverb.
Composition 1. Hints development – Paragraphwriting.
2. Comprehension.

Fundamentals of Communications:

Definition of communication, importance of communication, models of communication types Of communication, barriers in communication, essential elements of communication.

Unit IV

Grammar: Preposition, Conjunction.
Composition: 1. Dialogue Completion
2. Answer 'what' & 'when' questions.

Spoken Communication:

Importance of spoken communication, designing receiver oriented message, face to face communication, telephonic interviews, instructions and dictations.

Unit V

Grammar Simple, Compound, Complex sentences.
Composition: 1. Dialogue writing.
2. Answer 'why' & 'how' questions.

Functional Grammar:

Articles, prepositions, tenses, punctuations, common errors, reading and listening comprehension.

1.2 APPLIED MATHEMATICS

Schema:

1. The subject is divided into five units.
 2. Each unit is given a weightage of 16 marks
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UNIT – I:

1. Matrices and determinations.
2. Determination up to 3rd order.
3. Properties of Determinants.
4. Solutions of simultaneous equations using Cramer's rule.
5. Properties of Matrices.

UNIT – II:

1. Trigonometry – Introduction.
2. Trigonometry ratios – Multiple angles.
3. Trigonometry identities – Simple problems only.
4. Properties of triangles – Sine formulae – Cosine formulae and Projection formulae – problems.

UNIT – III:

1. Differential Calculus.
2. Differentiations – Concept – Differentiation of standard function.
3. Differentiations of Sum, Product & Division.

UNIT – IV:

1. Integral Calculus – Introduction.
2. Integration – Basic Definition.
3. Definite Integrals and properties.
4. Integration by substitution.
5. Integration by parts.
6. Simple Problems.

UNIT – V:

1. Linear equation involving two variables only.
2. Solution of simultaneous linear equations involving two variables.
3. Co-linear points.
4. Statistics – Introduction.
5. Frequency distributions Mean, Median, Mode, Standard Deviation and C.V.%.

Reference Books:

1. Engineering mathematics by Y M Gaura
2. Engineering mathematics by D N Vyas

1.3 APPLIED PHYSICS

Schema:

1. The subject is divided into five units.
 2. Each unit is given a weightage of 16 marks
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UNIT – I:

UNITS AND DIMENSIONS

1. M.K.S. system and C.G.S. system.
2. Fundamental quantities and units (S.I. system)
3. Derived quantities and units (S.I. system)
4. Supplementary SI units.
5. Dimension and Dimensional formula.
6. Application of Dimensional equations with examples, limitations.

UNIT – II:

HEAT

1. Expansion of Solids, Liquids and gases.
2. Definition of Co-efficient of linear, superficial and cubical expansion and derivation of their relationship.
3. Volume and pressure coefficients of Expansions of gases.
4. Boyle's law, Charles's law and derivation of ideal gas equations.

UNIT – III:

LIGHT AND SOUND

1. Optical instruments – Simple Microscopy.
2. Derivation of expressions for magnification of image at near point and far point.
3. Refractive index, Critical angle and total internal reflection, Conditions for TIR.
4. Derivation for the refractive index of prism.
5. Definition for oscillation, period, frequency, amplitude, velocity and wave length
6. Definition of Transverse wave and longitudinal wave, progressive wave and stationary wave.
7. Free, damped and forced vibrations.

UNIT- IV:

ELECTRICITY

1. Definitions of Ohm's law-Resistance, conductance & inductance.
2. Resistance in series and parallel – EMF-potential difference coulomb's law for Electricity charges.
3. Electric potential capacity capacitor in series and parallel.
4. Kirchhoff's laws.
5. Explanation and application of Kirchhoff's laws to Wheatstone's Bridge.

UNIT – V:

ELECTRONICS

1. Conductors, Insulators and Semi Conductors.
2. Intrinsic and Extrinsic Semi Conductors – P type and N type.
3. P – N Junction diode – forward bias and Reverse bias diode as a half wave rectifier and full wave rectifier.
4. PNP and NPN transistor and their characteristic.
5. Logic gates – OR, and NOT only.

Reference Books:

1. Engineering Physics by R K Gaura
2. Principles of physics by N Subramaniam & Brijlal

1.4 APPLIED CHEMISTRY

Schema:

1. The subject is divided into five units.
 2. Each unit is given a weightage of 16 marks
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UNIT – I:

1. Occurrence and classification of water and expressions of water hardness.
2. Disadvantages of hard water (with special focus of its use in textiles).
3. Softening of hard water by Clark's, Permutit and Calgon methods.
4. Oxidation and reduction – definition and examples.
5. Oxidizing and reducing agent and their functions.
6. Expressions of Acidity and Alkalinity – pH and pOH scale.

UNIT – II:

1. Properties and uses of Sodium Hydroxide, Sodium Hydrosulphite, Sodium carbonate, Hydrochloric Acid, Sulphuric Acid and Rongolite C (Sodium Sulphoxylate Formaldehyde).
2. Properties and uses of Sodium sulphate (Glauber's salt).

UNIT – III:

1. Study of the large scale manufacturing process, properties and uses of Hydrogen peroxide, Bleach power, Sodium Hypo Chlorite and Sodium Chlorite.
2. Brief introduction of Equivalent Weight, Atomic Weight and Molecular weight.
3. Introductory notes on Solute, Solvent, Solutions and Solubility.

UNIT – IV:

1. Classification and IUPAC Nomenclature of Organic Compounds.
2. Properties and uses of Benzene, Aniline, Naphthalene and Anthracene.
3. Conversion, General reaction and two examples in each of addition, substitution, esterification, hydrolysis and diazotization.

UNIT – V:

1. Definition and uses of soap and detergents.
2. Carbohydrates – definition, classification.
3. Polymers and their classification.
4. Brief study of Polymerization Reaction (emphasis on Addition and Condensation Polymerization)
5. Chemical Structure and properties of Textile fibers viz. Cotton, wool, silk, polyester, nylon and acrylic.

Reference Books:

1. Organic Chemistry Vol I & II by I L Finar
2. ISC Chemistry Class XI and XII by Madan & Bist
3. Text book of Organic Chemistry by P L Soni
4. Text book of Organic Chemistry by B S Bahal & A Bahal
5. IIT Chemistry Vol I by O P Agarwal & Avinash Agarwal
6. Concise of Inorganic Chemistry by L D Lee
7. A Text book of Organic Chemistry by P L Soni & H M Chawla

1.5.FIBER AND YARN TECHNOLOGY

Schema:

1. The subject is divided into five units.
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UNIT – I:

1. Definition of Textiles Fiber.
2. Classification of Textile fibers.
3. Requirement of basic properties and textiles fibers.
4. Physical, Chemical properties and end uses of cotton, wool, silk, and jute.
5. Ring spinning Technology for manufacture of Carded and Combed Cottonyarn.
6. Brief study of methodology in Blowroom, Carding, Drawframe, Unilap, Comber, Fly frame and Ring frame.

UNIT – II:

1. Flow Charts for Manufacturing of Viscose rayon, Acetate rayon and Polyester.
2. Physical, Chemical properties and end uses of Viscose rayon and Acetate rayon.
3. Flow Charts for Manufacturing of Nylon-6, Nylon-66, Poly-Acrylic and Polyester.
4. Physical, Chemical properties and end uses of Nylon-6, Nylon-66 and Poly-Acrylic.

UNIT – III:

1. Woolen and worsted yarn manufacturing Technology.
2. Silk rearing, Manufacturing of filament silk and spun silk yarns.
3. Production of Double/Twisted yarn.
4. Reeling, bundling and baling of yarn.

UNIT – IV:

1. Open end spinning.
2. Friction spinning.
3. Air Jet spinning.
4. Comparison of ring spun yarn with open- end spun yarn.

UNIT- V:

1. Preparation, Production and uses of Crepe yarn, Spot yarn, Crimped yarn, textured yarn, Chenille yarn, industrial yarns, Tyre cords and sewing threads.
2. Production of Blended Yarn (Polyester : Cotton, Polyester : Viscose and Polyester: Wool Blends)
3. Introduction of various techniques of fabrics production such as knitting, non-woven and carpets.
4. Process of Garment making – pattern making, cutting, stitching & finishing of garments.

Reference Books:

1. Textile Fibres by J W Cook
2. Fibre to fabric by Corman
3. Manmade Fibres by Moncrieff

1.6.WEAVING TECHNOLOGY & TEXTILE CALCULATION – I

Schema:

1. The subject is divided into five units.
 2. Each unit is given a weightage of 16 marks
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UNIT –I:

1. Different forms of yarn packages like hanks, cones, cheeses, and spools– purpose and use.
2. Essential characteristic of warp and weft.
3. Yarn Preparatory processes.
4. Warping and its requirements.
5. Peg warping, vertical warping and sectional warping.
6. Objective and importance of sizing of cotton yarn.
7. Ingredients uses in size mixture and their functions.
8. Various forms of sizing- hank sizing and street warp sizing.
9. Illustrative Size Recipe for cotton, Viscose and Polyester- cottonblends.
10. Ideal sizing.
11. Common defects during sizing- causes and remedies.

UNIT –II:

1. Evolution of Handlooms.
2. Various parts of a handloom and their function.
3. Type of handloom – Throw Shuttle handloom, Fly shuttle handloom – Pit loom & Frame loom.
4. Passage of warp in a fly shuttle handloom.
5. Motion of handloom – Definition of primary, Secondary & Auxiliary Motions.
6. Different type of shed formations – Centre Close shed, Bottom Closed shed, Top close shed, Open- shed and Semi – open shed.
7. Shedding mechanism of a handloom using treadles and Heald Reversing motions- Roller system, Pulley system and jack and lamrod system.

UNIT – III:

1. Picking mechanism of a handloom.
2. Type of shuttles – Throw shuttle, Fly shuttle and Roller Shuttle- Design and Suitability.
3. Beating up – Closed and beating and crossed shed beating.
4. Different type of reed – bamboo reed, pith bound steel reed and all metal steel reed- suitability for various fabrics.
5. Let of Motion Handlooms- Ratchet and Pawl, rope and weight, rope and lever and weight.
6. Take up motion in handlooms – Poker rod and ratchet & pawl.
7. Auxiliary Motions of a handloom – Temple motion and terry motion.

UNIT – IV:

1. Introduction to numbering yarn.
2. Indirect system of numbering of yarn – New English Cotton, New French, Decimal, Metric, Worsted, Woolen Yorkshire, Linen, Spun silk and Spun Rayon.
3. Direct System of numbering of yarn – Denier and Flax/ Jute/ Hemp.
4. Evolution of Universal system of numbering – Tex and its derivatives like milli – tex and kilo.

UNIT – V:

1. Determination of Conversion Factor.

2. Conversion of Count of yarn – Indirect to indirect.
3. Conversion of Count of yarn – Direct to Direct.
4. Conversion of Count of yarn – Direct to Indirect.
5. Conversion of Count of yarn – Indirect to Direct

Schema:-

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UNIT – I:

1. Classification of fabrics – Woven, Non-woven, Knitted and Braided fabrics – simple, Compound and complex.
2. Interlacement diagram – Warp way and weft way.
3. Graphical representation of structure of a woven fabric.
4. Study of plain weave.
5. Weave, Creation of draft, peg plan and tie-up from the weaver repeat.
6. Ornamentation of plain fabrics. Study of derivative structures of plain – Regular and irregular Warp rib, Regular and irregular Weft rib and Regular and irregular Hopsack weaves.
7. Catch-cord technique for weaving warp rib and hop-sack.

UNIT – II:

1. Study of twill weave up to 12 threads.
2. Classification of twills – warp faced twill, weft faced twill and equal faced twill.
3. Angle of inclination of twill diagonals, Influence of the twist direction of yarn over prominence of twill diagonals.
4. Study of derivatives of twill weave – Wavy twill, Herringbone, Transposed twill.
5. Broken twill and curved twill, Elongated combined twill and shaded twill.
6. Difference between various Twills.

UNIT – III:

1. Diamond Weave.
2. Twill dice check.
3. Diaper.
4. Regular and irregular satin upto 12 threads.
5. Regular and irregular sateen upto 12 threads.
6. Satin dice check.
7. Difference between Diamond and Diaper, Sateen and satin.

UNIT – IV:

1. Study of Honey comb weaves – Ordinary Honey comb weaves – Single stitched, Doublestitched.
2. Brighton Honey comb – cell formation – suitability for toweling purpose.
3. Study of Huck-a-Back weaves.
4. Study of Mock leno weaves.
5. Differences between Ordinary Honey comb and Brighton Honey comb
6. Differences between Huck-a-Back and Mock Leno.

UNIT – V:

1. Study of Corkscrew weaves.
2. Simple Colour and weave effect; continuous line effects, hound's tooth patterns, bird's eye and spot effect, hairline stripes, step patterns, and all over effects.
3. Study of Crepe weaves – Construction upon sateen base, by combination of floating weaves with plain thread, by reversing and by insertion of one weave over another.

Reference books:

1. Watson's Textile Design and colour by Z.J. Grosociki.
2. Watson's Advanced Textile Design and Colour by Z,J. Grosociki.
3. Structural Fabric Design by James W. Kilbbe,
4. Fabric Structure by James Golak.
5. Woven cloth construction by R. Mark.
6. Grammar of Textile Design by H. Nisbet.
7. Woven structure and Design by DoriGeomar

1.8.CHEMISTRY PRACTICE

Schema:

1. The activities to be carried out are given in the syllabus
 2. Every student shall be trained in all the listed activities
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1. Demonstration of the use of various apparatus of Chemistry lab.
2. Demonstration of safe handling of Chemicals.
3. Demonstration of weighing technique.
4. Demonstration of measurement of pH by Universal Indicator.
5. Demonstration technique of volumetric analysis.
6. Preparation of standard solution required for volumetric analysis.
7. Acid – Alkali titrations.
8. Estimation the strength of Oxalic acid in terms of normality and g/l by using ferrous sulphate and potassium permanganate solution.
9. Estimation the strength of ferrous Ammonium Sulphate in terms of normality and g/l using Potassium Permanganate solution.
10. Estimation of the strength Bleaching Powder.
11. Estimation of the strength Hydrogen Per Oxide.
12. Estimation of Hardness of water by EDTA method.
13. Preliminary testing to detected Acid and basic radicals.
14. Detecting Acidic Radicals from given salt (Except Interfering Radicals)
15. Detecting the Basic form the given salt.
16. Analysis of the given salt for ACIDIC / BASIC Radicals.

1.9.WEAVING TECHNOLOGY PRACTICE – I

Schema:-

1. The activities to be carried out are given in the syllabus
 2. Every student shall be trained in all the listed activities
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UNIT – I

PREPARATORY PROCESSES

1. Sketching of different parts of preparatory equipments and familiarization of their functions.
2. Sketching of different kinds of handlooms and their parts, familiarization of their functions.
3. Sketching and Practice of various Knots and piecing. Bobbin winding for warp preparation. Pirn winding for weft preparation.
4. Mono colour Warping using peg warping board, vertical and horizontal warping machines.
5. Multi colour warping as per the given pattern using peg, warping board vertical and horizontal warping machines.

UNIT – II

FABRIC DEVELOPMENT

1. Straight draft – Drawing –in and denting for plain weaving.
2. Practicing tie-up in the loom to weave plain in twotreadles.
3. Setting- up of shedding mechanism for smooth weaving in the allotted loom.
4. Fabric sample development within plain weave in different textures and different textures and different materials using sample / handloom.
5. Preparation of Design, draft, denting plan and tie-up plan of all the weaves dealt in Fabric Structure – I.
6. Practicing to do drafting, tie-up in the loom as per the drafting order derived for the above weaves.
7. Practicing to do pegging / tie-up in the loom as per peg-plan / tie-up plan derived for the above weaves.
8. Finding drafting order in the loom (upto 4 healds) and creating possible weaves to produce in that draft order.
9. Setting-up of shedding mechanism for smooth weaving in the allotted loom.
10. Mending the broken ends by drawing the ends by following the continuity of drafting in the loom allotted.
11. Developing samples without any defects as per the peg-plan / treading order derived for the above weaves.
12. Preparing the album samples developed and writing their quality particulars.

UNIT –III:

FABRIC ANALYSIS

1. General principles of cloth analysis.
2. Extracting warp and weft pattern
3. Analysis of fabrics like plain, twill and satin
4. Extracting fundamental details like count of warp and weft, ends and picks per unit space; warp and weft crimp and weave repeat.
5. Deriving drafting, denting, peg-plan / tie-up for the weave

1.10.ENGINEERING DRAWING PRACTICE

Schema:-

1. The activities to be carried out are given in the syllabus
 2. Every student shall be trained in all the listed activities
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1. Introduction, use and Practice of Engineering drawing instruments and different grades of pencil.
2. Use of I.S. Code and sheet layout of Engineering drawing.
3. Practice of Engineering lettering and numbering.
4. Use and meaning of different lines.
5. Practice and use of dimensioning.
6. Use and construction of Scales like Plain scale, Diagonal scale, Comparative scale, Reducing and increasing scale,
physical signification of representative fraction.
7. Basic idea of Theory of projection.
8. Projection plane.
9. Use and practice of First angle projection.
10. Use and practice of Third angle projection.
11. Practice of Projection of point.
12. Practice of Projection of Straight line.
13. Practice of Projection of square plane.
14. Practice of Geometrical Construction (supported drawings)
15. Practice of Geometrical Construction of polygons.
16. Practice of construction of drawing of Cube, Prism, Pyramid, Cone and Cylinder in first position.
17. Practice of construction of drawing of Prism and Pyramid in first position with said inclines to V.
18. Practice of drawing of Prism and cylinder in second position.
19. Idea and practice of Isometric projection of solids – Terminology, Isometric view and Isometric projection.

Reference Book:

1. Engineering Drawing by N D Bhatt