Uttar Pradesh Textile Technology Institute Kanpur

PROPOSED STUDY & EVALUATION SCHEME
FOR
B.TECH
(TEXTILE TECHNOLOGY)
3rd YEAR

On

Choice Based Credit System

Effective from SESSION-2018-19

UP Textile Technology Institute Kanpur

STUDY AND EVALUATION SCHEME

B. Tech. Textile Technology

3rd Year V-SEMESTER **Effective from SESSION-2018-19**

S. No.	Subject Code	Subject Name	L-T-P	Th./Lab Marks	Sessional		Total	Credit
				ESE	CT	TA		
1	RAS501	Managerial Economics	3-0-0	70	20	10	100	3
2	RAS502/ RUC501	Sociology/ Cyber Security	3-0-0	70	20	10	100	3
3	RTT501	Textile Testing-I	3-1-0	70	20	10	100	4
4	RTT502	Yarn Manufacture-III	3-0-0	70	20	10	100	3
5	RTT503	Fabric Manufacture-III	3-0-0	70	20	10	100	3
6	RTT011/ RTT012	Structure & Properties of Fibres/ Textile Design & Colour	3-1-0	70	20	10	100	4
	PRACTICALS							
7	RTT551	Textile Testing-I Lab	0-0-2	50		50	100	1
8	RTT552	Yarn Manufacture-III Lab	0-0-2	50		50	100	1
9	RTT553	Fabric Manufacture-III Lab	0-0-2	50		50	100	1
10	RTT557	Structure & Properties of Fibres Lab	0-0-2	50		50	100	1
	TOTAL			620	120	260	**1000**	**24**

Department Elective I:

1.RTT011: Structure & Properties of Fibres

2.RTT012: Textile Design & Colour

UP Textile Technology Institute Kanpur

STUDY AND EVALUATION SCHEME

B. Tech. Textile Technology

3rd Year VI-SEMESTER **Effective from SESSION-2018-19**

S. No.	Subject Code	Subject Name	L-T-P	Th./Lab Marks	Sessional		Total	Credit
				ESE	CT	Ta		
1	RAS601	INDUSTRIAL MANAGEMENT	3-0-0	70	20	10	100	3
2	RUC601/ RAS602	CYBER SECURITY/ SOCIOLOGY	3-0-0	70	20	10	100	3
3	RTT601	Textile Testing-II	3-1-0	70	20	10	100	4
4	RTT602	Advanced Spinning Technology	3-0-0	70	20	10	100	3
5	RTT603	Advanced Weaving Technology	3-0-0	70	20	10	100	3
6	RTT021/ RTT022	Fabric Structure / Multi &Long Fibre Spinning	3-1-0	70	20	10	100	4
	PRACTICALS							
7	RTT651	Textile Testing II Lab	0-0-2	50		50	100	1
8	RTT652	Advanced Spinning Technology Lab	0-0-2	50		50	100	1
9	RTT653	Advanced Weaving Technology Lab	0-0-2	50		50	100	1
10	RTT654	Fabric Structure Lab	0-0-2	50		50	100	1
	TOTAL			620	120	260	**1000**	**24**

Department Elective I:

1.RTT021: Fabric Structure & Analysis

2.RTT022: Multi & Long Fibre Spinning

5th Semester B. Tech. Textile Technology

1.Managerial Economics (RAS-501) [L-T-P: 3-0-0]

Unit I –

Introduction of Engineering Economics and Demand Analysis: Meaning and nature of Economics, Relation between science, engineering, technology and economics; Meaning of Demand, Determinants of Demand, Shifts in demand, Law of Demand, Price Elasticity of Demand &Types, Income Elasticity, Cross price Elasticity, Determinants of Elasticity, uses and importance of elasticity. **Total Lectures Required = 6**

Unit II –

Concept of Supply: Law of Supply, Factors affecting Supply, Elasticity of supply.
Demand Forecasting: Introduction, Meaning and Forecasting, Methods or Techniques of Demand Forecasting, Criteria for Good Demand Forecasting, Demand Forecasting for a New Product; **Total Lectures Required = 6**

Unit III –

Cost Analysis- Introduction, Types of Costs, Cost-Output Relationship: Cost Function, Cost-Output Relationships in the Short Run, and Cost-Output Relationships in the Long Run; Short run and long run, Break- Even Analysis; Production functions: laws of variable proportions, law of returns; Economies of scale: Internal and external. **Total Lectures Required = 6**

Unit IV –

Market Structure: Market Structure Perfect Competition, Imperfect competition – Monopolistic, Oligopoly, duopoly sorbent features of price determination and various market conditions. **Total Lectures Required = 6**

Unit V –

Nature and characteristics of Indian economy, concepts of LPG, elementary concepts of National Income, Inflation and Business Cycles ,Concept of N.I. and Measurement., Meaning of Inflation, Types and causes, Phases of business cycle .Investment decisions for boosting economy(National income and per capital income) **Total Lectures Required = 6**

References:

1. Premvir Kapoor, Sociology and Economics for Engineers, Khanna Publishing House (Edition 2018)
2. Salvatore D, “Principles of Microeconomics”, Oxford University Press.
3. Koutsoyiannis A, “Modern Microeconomic”, Macmillan Education Ltd.
4. Dwivedi DN, “Principles of Microeconomics”, Pearson Education.
5. Cowell, FA, “Microeconomic Principles and Analysis”, Oxford University Press.

2. Sociology (RAS-502 / RAS-602) [L-T-P: 3-0-0]

Unit I –
Industrial Sociology: Nature, Scope and Importance of Industrial Sociology. Social Relations in Industry, Social Organisation in Industry- Bureaucracy, Scientific Management and Human Relations. **Total Lectures Required = 6**

Unit II –
Rise and Development of Industry: Early Industrialism – Types of Productive Systems – The Manorial or Feudal system. The Guild system, The domestic or putting-out system, and the Factory system. Characteristics of the factory system. Causes and Consequences of industrialization. Obstacles to and Limitations of Industrialization. **Total Lectures Required = 6**

Unit III –
Industrialization in India. Industrial Policy Resolutions – 1956. Science Technology and Innovation Policy of India 2013. **Total Lectures Required = 6**

Unit IV –
Contemporary Issues: Grievances and Grievance handling Procedure. Industrial Disputes: causes, Strikes and Lockouts. Preventive Machinery of Industrial Disputes: Schemes of Workers Participation in Management- Works Committee, Collective Bargaining, Bi-partite & Tri-partite Agreement, Code of Discipline, Standing Orders. Labour courts & Industrial Tribunals.
Total Lectures Required = 6

Unit V –
Visualizing the future: Models of industrialization- Collectivist, anarchist, free market environmentalist, etc. Cultural issues, consumer society and sociological concerns.
Total Lectures Required = 6

References:

1. PREMVIR KAPOOOR, Sociology & Economics for Engineers, Khanna Publishing House (Edition 2018).
2. GISBERT PASCAL, Fundamentals of Industrial sociology, Tata McGraw Hill, New Delhi, 1972.
3. SCHNEIDER ENGNO V., Industrial Sociology 2nd Ed., McGraw Hill Publishing Co., New Delhi, 1979.
4. MAMORIA C.B. And MAMORIA S., Dynamics of Industrial Relations in India. SINHA G.P. and P.R.N. SINHA, Industrial Relations and Labour Legislations, New Delhi, Oxford and IBH Publishing Co., 1977.
5. S.C. SHARMA, Industrial Safety and Health Management, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-188)
6. NADKARNI, LAKSHMI, Sociology of Industrial Worker, Rawat, Jaipur,1998.
7. BHOWMICK SHARIT, Industry, Labour and Society,Orient, 2012.
8. RICHARD BROWN, JOHN CHILD, AND S R PARKER, The Sociology of Industry 1st Edition, Routledge, 2015.

3. Cyber Security (RUC-501 / RUC-601) [L-T-P: 3-0-0]

Unit I –

Introduction- Introduction to Information Systems, Types of Information Systems, Development of Information Systems, Introduction to Information Security, Need for Information Security, Threats to Information Systems, Information Assurance, Cyber Security, and Security Risk Analysis. **Total Lectures Required = 8**

Unit II –

Application Security- (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology-Firewall and VPNs, Intrusion Detection, Access Control. Security Threats -Viruses, Worms, Trojan Horse, Bombs, Trapdoors, Spoofs, E-mail Viruses, Macro Viruses, Malicious Software, Network and Denial of Services Attack, Security Threats to E-Commerce- Electronic Payment System, e- Cash, Credit/Debit Cards. Digital Signature, Public Key Cryptography. **Total Lectures Required = 8**

Unit III –

Developing Secure Information Systems- Application Development Security Information Security Governance & Risk Management, Security Architecture & Design Security Issues in Hardware, Data Storage & Downloadable Devices, Physical Security of IT Assets, Access Control, CCTV and Intrusion Detection Systems, Backup Security Measures.
Total Lectures Required = 8

Unit IV –

Security Policies- Development of Policies, WWW Policies, Email Security Policies, Policy Review Process-Corporate Policies-Sample Security Policies, Publishing and Notification Requirement of the Policies.
Evolving Technology Security – Mobile, Cloud, Outsourcing, SCM.
Total Lectures Required = 8

Unit IV –

Information Security Standards-ISO, IT Act, Copyright Act, Patent Law, IPR. Cyber Laws in India; IT Act 2000 Provisions, Intellectual Property Law: Copy Right Law, Software License, Semiconductor Law and Patent Law.
Case Study – Corporate Security **Total Lectures Required = 8**

References:

1. Charles P. Pfleeger, Shari Lawerance Pfleeger, “Analysing Computer Security”, Pearson Education India.
2. V.K.Pachghare, “Cryptography and information Security”, PHI Learning Private Limited, Delhi, India.
3. Sarika Gupta & Gaurav Gupta, Information Security and Cyber Laws, Khanna Publishing House .
4. Anshul Kaushik, Cyber Security, Khanna Publishing House
5. Dr.Surya Prakash Tripathi, Ritendra Goyal, Praveen Kumar Shukla ,”Introduction to Information Security and Cyber Law” Willey Dreamtech Press.
6. Michael E.Whitman and Herbert J Mattord "Principle of Information Security" Cengage
7. Mike Chapple and David Seidl "Cyberwarfare: Information operations in a connected world" Jones & Bartlett Learning
8. Schou, Shoemaker, “Information Assurance for the Enterprise”, Tata McGraw Hill.
9. CHANDER, HARISH,” Cyber Laws And It Protection ” , PHI Learning Private Limited ,Delhi.
10. V.K. Jain, Cryptography and Network Security, Khanna Publishing House, Delhi

4.Textile Testing-I (RTT-501) [L T P 3-1-0= 4]

Unit (1): Introduction to textile testing (1), Atmospheric conditions for testing, absolute & relative humidity, moisture regain & moisture content (1), importance of moisture in textiles, measurement of moisture regain & content (1), effect of moisture on properties of textile material, factors affecting the regain (1), correct invoice weight, oven dry weight 1(1), Shirley moisture meter (1). Dry and wet bulb hygrometer, sling, Assmann, hair hygrometers (1), control of testing room atmosphere (1),

Total Lectures Required = 8

Unit (2): Sampling, random sampling, biased sampling (1), sampling techniques for fibre yarn and fabric (1), Grading of cotton fibre with respect to staple length (1), laboratory measurement of fibre length, span length, Baer sorter (1), Shirley photo electric staple, servo fibro graph (1).

Total Lectures Required = 5

Unit (3): AFIS (1), Napping potential (1), Nep count (1), rating of neps, maturity coefficient measurement by NaOH method, fibre fineness by airflow meter & Sheffield micronaire (2), Vibroscope(1). salient features of HVI(1), Advancements in fibre testing (1)

Total Lectures Required = 8

Unit (4): Fibre bundle strength by stelometer (1), fibre quality index, linear density of man made fibres and their strength (1), spin finish, crimp analysis (1), Shirley trash analyzer (1). wrapping test for lap, sliver, roving and yarn (2),

Total Lectures Required = 6

Unit (5): Determination of yarn count, diameter (1), average & resultant count of folded yarn, relation between Ne, D, T, Nm (1). Instruments used for determination of count, quadrant balance, Knowles balance, beesley balance and physical balance (2), Twist, classification of twist, twist measurement, direct counting method, continuous twist tester, twist-untwistmethod, (2), Twist tester, (2), R.B. twist tester, level of twist (1).

Total Lectures Required = 9

Grand total of lectures required = 42

Reference Books: -

1. **Testing and Quality Management,** Vol 1, IAFL Publications,V.K. Kothari
2. **Principle of Textile Testing** by J.E. Booth, CBS Publishers
3. **Physical testing of textiles** by B.P. Savile, Woodhead Publishing.

5. Yarn Manufacture-III (RTT-502) [L T P 3-0-0 = 3]

Unit (1): Objects of ring frame (1), drafting system (1), drafting, twisting & winding on ring frame (4), yarn twist by traveller (1), propagation of twist, spinning triangle (1). Traveller forces analysis (1)

Total Lecturers Required = 8

Unit (2): Builder motion(1), types of rings and travellers and their common uses (1) , lappet movement (1), balloon control rings, apron drafting system mechanical and actual draft (4)

Total Lecturers Required = 7

Unit (3): Ring frame wastes (1), limitation of ring spinning and factors responsible for loss in efficiency (2), yarn faults and their remedies (2), Advancements in ring spinning. (2)

Total Lecturers Required = 7

Unit 4: Compact spinning (1)**,** study of various compact spinning systems (1). Objects of doubling, ring doublers (2), TFO(2), fancy yarns manufacturing(1).
Total Lecturers Required = 7

Unit 5: Sewing thread and tyre Cord yarns (2). Reeling, yarn bundling, calculation of draft, TPI and production of ring frame & doubling frame (4).
Total Lecturers Required = 6

Grand Total of lectures required =40

Reference Books: -
1.Elements of ring frame & doubling – Dr. A.R. Khare
2.The technology of short-shape staple spinning – W. Klein
3.Cotton spinning – Taggart
4.Spun yarn technology – Oxtoby
5.Fundamentals of Spun yarn technology by C. A. Lawrence

Laboratory work: As per the lab Syllabus

6. Fabric manufacture-III (RTT-503) [L T P 3-0-0 = 3]

Unit (1): Introduction to Jacquards shedding (1), types of jacquards and their principle of working (2) , cross border jacquards (1). Single lift single cylinder Jacquard (1), Double lift single cylinder (1), Double lift double cylinder (1), Different system of harness tying and mounting (1). Developments in jacquard (1)
Total Lectures Required = 8

Unit 2: Introduction to terry weaving, Classification of terry fabrics (1) Different mechanism for terry manufacturing (2), Properties and performance of terry fabric (2), Recent developments in jacquard weaving, **Total Lectures Required = 7**

Unit 3: Automatic loom: pirn change, shuttle change loom, detailed study of various motions of automatic looms, mechanical warp stop motions, electro-mechanical warp stop motion.
Total Lectures Required = 9

Unit (4): Multiple box motion and their types, two colours and four-colour drop box motion, brief description of pick-at will, pick and pick motion. On line process and quality control, estimation of productivity, snap study. **Total Lectures Required = 7**

Unit (5): Heald and read count calculation (2), Calculation related to production and efficiency of loom shed (2), Fabric set calculations. **Total Lectures Required = 08**
Grand Total of lectures required = 42

Reference Books: -
1.Weaving mechanism by Fox.
2.Weaving mechanism by N.N. Bannergy.
3.Weaving Calculation by R. Sengupta.
4.Weaving machine & mechanism by Talukdar

5.Handbook of weaving by SabitAdanur
6. Textile Mathematics by J E Booth
7.Woven Terry fabric by Singh &Verma

Laboratory work: As per the lab Syllabus

6. Departmental Elective 1

a) Structure & properties of Fibres (RTT-011) [L T P 3 1 0] Credits = 4

Unit (1): Basic structural features of fibre, Structure of Cotton, wool, silk, and other textile fibres, relation between fibre structure and fibre, Methods of estimating molecular weight, orientation, crystallinity & crystalline orientation of fibre forming polymer, Overall orientation by "sonic modulus tester,
Total Lectures Required = 8

Unit (2): Concept of scanning electron microscope (SEM) and brief introduction of FESEM**,** Concept of transmission electron microscope (TEM) Fourier Transform Infrared Spectroscopy (FTIR), Atomic force microscopy, fibre fracture.
Total Lectures Required = 8

Unit (3): Thermal behavior of textile fibres by Differential Scanning Calorimeter (DSC) (2), Thermo-gravimetric analysis (TGA) (2), Thermomechanical Analyser (TMA) Density gradient column (2), Preparation of density gradient coloumn (2) Density by density gradient coloumn.
Total Lectures Required = 8

Unit (4): Optical properties of fibres (2), Birefringence behavior, dielectric properties, fibre friction, fibre friction measurement, fibre to fibre, yarn to yarn friction measurement
Total Lectures Required = 8

Unit (5): Creep behavior (2), concept of moisture absorption by fibres (2), (2). Moisture absorption, heat of absorption, differential heat of absorption, integral heat of absorption, Quantitative theory of heat moisture absorption, Rate of moisture absorption
Total Lectures Required = 10
Grand Total of lectures required = 42
Laboratory work: As per the lab Syllabus

Reference Book: -
1.Manufactured fibre technology by V.B. Gupta, V.K. Kothari
2.Physical properties of fibre by J.W.S. Hearle
3.Thermal behavior of material by Turi
4.Modern yarn production by Ray
5.Textile fibres by ATIRA
6.ASTM Standard books
7.Polymers by fibre & textiles encyclopedia
8.Advances in fibre source by S.K. Mukhopadhyaya

a) **Textile Design & Colour (RTT-012) [L T P 3-1-0 =4]**

Unit (1): Light and colour phenomena, physical basis of colour, Emission & absorption theory of light, Colour vision and light theory of colours, Complementary colours, Chromatic circle, Pigment theory of colours, Brewster circle, Attributes of the primary & secondary colours,

Total Lectures required = 11

Unit (2): Colour measurement, Primary, Secondary, Tertiary & compound colours, Biren's triangle, Modification of colours, Coloured greys, Colours in combination, Colour contrast, contrast in hue, contrast of tone, colour harmony, Relative spaces occupied by colours, divisional colours, Application of colours, Mixed colour effect,.

Total Lectures required =11

Unit (3): Composition of designs, Condition to be observed during ornamentation of fabrics, Mode shade, Harmony of succession, gradation of hue, Different stages of colouring of textile materials, Colour and weave effect and its classification. Bases of Textile design, One third and one fourth drop design, Half drop and drop reverse design,

Total Lecture required = 10

Unit (4): Unit repeating design, Geometric ornamentation, Construction of symmetrical designs, Stripe and check effect designs, Sari border / vertical border design, Factor affecting the woven designs, reversing inclined figure, Diamond, Ogee, & diagonal waved line base, applications of colours.

Total Lecture required = 10

Unit (5): Art sheet based question covering all above units

Grand total Lectures required = 42

Reference Books:

1.W. Watson- Textile design and colour
2.Traditional Textile designs B K Behera

6th Semester B. Tech. Textile Technology

1. Industrial Management (RAS-601) [L T P 3-0-0]

Unit I –

Introduction: Concept and scope of Industrial Management. **Productivity:** Definition, measurement, productivity index, types of production system, Industrial Ownership.
Total Lectures Required = 6

Unit II –

Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Social responsibilities of Management, Introduction to Human resources management: Nature of HRM, functions and importance of HRM.
Work Study: Introduction, definition, objectives, steps in work study,
Total Lectures Required = 6

Unit III –

Method study: definition, objectives, steps of method study, Work Measurement: purpose, types of study — stop watch methods — steps — allowances — standard time calculations — work sampling, Production Planning and Control Inventory Control: Inventory, Cost, Models of inventory control: EOQ, ABC, VED. **Total Lectures Required = 6**

Unit IV –

Quality Control: statistical quality control, Control charts for variables and attributes, Acceptance Sampling- Single sampling- Double sampling plans, Introduction to TQM.
Total Lectures Required = 6

Unit V –

Project Management: Project network analysis, CPM, PERT and Project crashing and resource Leveling. **Total Lectures Required = 6**

References:

1. Engineering Management (Industrial Engineering & Management)/ S.C. Sharma & T.R. Banga, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-072)
2. Industrial Engineering and Management/ P. Khanna, Dhanpatrai publications Ltd.
3. Production & Operation Management /PaneerSelvam /PHI.
4. Industrial Engineering Management/NVS Raju/Cengage Learning.
5. Industrial Engineering Management I RaviShankar/ Galgotia.

2. Sociology (RAS-502 / RAS-602) [L-T-P: 3-0-0]

Unit I –
Industrial Sociology: Nature, Scope and Importance of Industrial Sociology. Social Relations in Industry, Social Organisation in Industry- Bureaucracy, Scientific Management and Human Relations. **Total Lectures Required = 6**

Unit II –
Rise and Development of Industry: Early Industrialism – Types of Productive Systems – The Manorial or Feudal system. The Guild system, The domestic or putting-out system, and the Factory system. Characteristics of the factory system. Causes and Consequences of industrialization. Obstacles to and Limitations of Industrialization. **Total Lectures Required = 6**

Unit III –
Industrialization in India. Industrial Policy Resolutions – 1956. Science Technology and Innovation Policy of India 2013. **Total Lectures Required = 6**

Unit IV –
Contemporary Issues: Grievances and Grievance handling Procedure. Industrial Disputes: causes, Strikes and Lockouts. Preventive Machinery of Industrial Disputes: Schemes of Workers Participation in Management- Works Committee, Collective Bargaining, Bi-partite & Tri-partite Agreement, Code of Discipline, Standing Orders. Labour courts & Industrial Tribunals.
Total Lectures Required = 6

Unit V –
Visualizing the future: Models of industrialization- Collectivist, anarchist, free market environmentalist, etc. Cultural issues, consumer society and sociological concerns.
Total Lectures Required = 6

References:

1. PREMVIR KAPOOOR, Sociology & Economics for Engineers, Khanna Publishing House (Edition 2018).
2. GISBERT PASCAL, Fundamentals of Industrial sociology, Tata McGraw Hill, New Delhi, 1972.
3. SCHNEIDER ENGNO V., Industrial Sociology 2nd Ed., McGraw Hill Publishing Co., New Delhi, 1979.
4. MAMORIA C.B. And MAMORIA S., Dynamics of Industrial Relations in India. SINHA G.P. and P.R.N. SINHA, Industrial Relations and Labour Legislations, New Delhi, Oxford and IBH Publishing Co., 1977.
5. S.C. SHARMA, Industrial Safety and Health Management, Khanna Book Publishing Co. (P) Ltd., Delhi (ISBN: 978-93-86173-188)
6. NADKARNI, LAKSHMI, Sociology of Industrial Worker, Rawat, Jaipur,1998.
7. BHOWMICK SHARIT, Industry, Labour and Society,Orient, 2012.
8. RICHARD BROWN, JOHN CHILD, AND S R PARKER, The Sociology of Industry 1st Edition, Routledge, 2015.

3. Cyber Security (RUC-501 / RUC-601) [L-T-P: 3-0-0]

Unit I –

Introduction- Introduction to Information Systems, Types of Information Systems, Development of Information Systems, Introduction to Information Security, Need for Information Security, Threats to Information Systems, Information Assurance, Cyber Security, and Security Risk Analysis. **Total Lectures Required = 8**

Unit II –

Application Security- (Database, E-mail and Internet), Data Security Considerations-Backups, Archival Storage and Disposal of Data, Security Technology-Firewall and VPNs, Intrusion Detection, Access Control. Security Threats -Viruses, Worms, Trojan Horse, Bombs, Trapdoors, Spoofs, E-mail Viruses, Macro Viruses, Malicious Software, Network and Denial of Services Attack, Security Threats to E-Commerce- Electronic Payment System, e- Cash, Credit/Debit Cards. Digital Signature, Public Key Cryptography. **Total Lectures Required = 8**

Unit III –

Developing Secure Information Systems- Application Development Security Information Security Governance & Risk Management, Security Architecture & Design Security Issues in Hardware, Data Storage & Downloadable Devices, Physical Security of IT Assets, Access Control, CCTV and Intrusion Detection Systems, Backup Security Measures.
Total Lectures Required = 8

Unit IV –

Security Policies- Development of Policies, WWW Policies, Email Security Policies, Policy Review Process-Corporate Policies-Sample Security Policies, Publishing and Notification Requirement of the Policies.
Evolving Technology Security – Mobile, Cloud, Outsourcing, SCM.
Total Lectures Required = 8

Unit IV –

Information Security Standards-ISO, IT Act, Copyright Act, Patent Law, IPR. Cyber Laws in India; IT Act 2000 Provisions, Intellectual Property Law: Copy Right Law, Software License, Semiconductor Law and Patent Law.
Case Study – Corporate Security **Total Lectures Required = 8**

References:

1. Charles P. Pfleeger, Shari Lawerance Pfleeger, “Analysing Computer Security”, Pearson Education India.
2. V.K.Pachghare, “Cryptography and information Security”, PHI Learning Private Limited, Delhi, India.
3. Sarika Gupta & Gaurav Gupta, Information Security and Cyber Laws, Khanna Publishing House .
4. Anshul Kaushik, Cyber Security, Khanna Publishing House
5. Dr.Surya Prakash Tripathi, Ritendra Goyal, Praveen Kumar Shukla ,”Introduction to Information Security and Cyber Law” Willey Dreamtech Press.
6. Michael E.Whitman and Herbert J Mattord "Principle of Information Security" Cengage
7. Mike Chapple and David Seidl "Cyberwarfare: Information operations in a connected world" Jones & Bartlett Learning
8. Schou, Shoemaker, “Information Assurance for the Enterprise”, Tata McGraw Hill.
9. CHANDER, HARISH,” Cyber Laws And It Protection ” , PHI Learning Private Limited ,Delhi.
10. V.K. Jain, Cryptography and Network Security, Khanna Publishing House, Delhi.

4. Textile Testing-II (RTT-601) [L T P 3-1-0= 4]

Unit (1): Tensile properties of yarn and fabric, stress-strain curve, various methods for finding of yield point, methods for finding of various modulus, estimation of tenacity, and stiffness of fabric. **Total Lectures Required = 7**

Unit (2): Procedure of determination of strength and elongation in the spun yarns, knowledge about the equipment used, yarn tensile strength testing machines, single yarn strength tester, lea strength tester, fabric strength tester- impact tester, Grab test, fabric B.S. Test, Scott serigraph, Instron tensile tester. **Total Lectures Required = 9**

Unit(3): Principles and methods of evenness testing ,Testing of yarns evenness, nature and causes of irregularities, evaluation and interpretation of evenness diagram & spectrogram and their associated equipment, Classimat faults. **Total Lectures required =9**

Unit (4): Measurement of physical properties of fabric and the knowledge of the equipment used, tensile strength, bursting strength, tearing strength, pilling, air permeability, crimp, thickness, EPI, PPI, weight and cover factor. **Total Lectures required =10**

Unit (5): Measurement of water repellency, shrinkage, measurement of fastness to light and rubbing, thermal transmission, Brief introduction to FAST and KAWABATA. **Total Lectures required =7**

Grand total of lectures required = 42

Text Books & Reference Books: -

1.Physical testing of textiles by B.P. Saville.
2.Quality control and testing management by Dr. V.K. Kothari.
3.Principles of textile testing by J.E. Booth.
4.Quality control by V.K. Kothari

Laboratory work: As per the lab Syllabus

5. Advance Spinning Technology (RTT-602) [L T P 3 0 0=3]

Unit-1: Limitation of ring spinning (1), Principles of unconventional method of yarn manufacturing (1) Classification of new spinning yarn technology (1), open-end spinning process(1), Advantages and Limitations of open-end spinning process(1),

Unit-2: Rotor spinning- Objects of rotor spinning (1), Principle of operation(1), Raw material requirements(1), opening unit, yarn formation(1) Design of rotor, Navel and yarn withdrawal tube(1) Automation in rotor spinning(2), yarn characteristics, comparison of yarn properties of ring yarn and rotor yarn (1).

Unit-3: Friction spinning- Principle(1) DREF-2 and DREF-3, yarn formation , yarn quality, yarn structure(1) fibre specifications for optimum results, merits & limitations(1) Twist less spinning-TNO process and TWILLO process(1), Traveller-less NOVA Spinning

Unit-4: Air jet Spinning-Principle(1), concept of false twist(1), Fasciated yarn, Murata jet spinning, operation principle(1) Raw material requirement, Effect of process variables on yarn twist& (1) tenacity, yarn quality, limitation of air jet yarns(1) self twist process(2)

Unit-5: Bobtex ICS process(1), Wrap spinning(1), plyfil spinning(1),SIRO spinning(1),Electrostatic spinning(1), Core spinning(1)

Grand total of lectures required = 42

Laboratory work: As per the lab Syllabus

Reference Book-

1.New Spinning Technology Vol. 4 & 5 –W.Klien
2.Fundamentals of Spun yarn technology by C. A. Lawrence
3.Spun yarn technology – Oxtoby

Laboratory work: As per the lab Syllabus

5. Advance Weaving Technology (NTT-041) (L T P 3 0 0=3)

Unit 1: Principle of operation of shuttleless loom (2) Classification of shuttleless looms., Comparative study of various systems of weft insertion (2) advantage of shuttleless looms over shuttle looms (2)

Total of lectures required=7

Unit-2: Basic operational principle of projectile weaving machinery, picking mechanism of Sulzer projectile loom, beating (3), Selvedge formation (2) multicolour weft feeding on projectile loom (2)

Total of lectures required=7

Unit-3: The Rapier system of weft insertion (1) Classification of Rapier looms and its description(2) flexible and rigid rapier (2) Dewas and Gabler system of weft transfer (2) weft Control mechanism, loom timing (2,) rapier design, tip transfer mechanism of rapier loom

Total lectures required=8

Unit-4: Working principle of Air-jet weaving (2) essential requirements of air-jet loom, weft measuring, weft tensioning devices (2) beating-up, weft gripping, weft cutting (2) weft stop motion selvedge formation (2), Tendom nozzle and relay nozzles, quality of compressed air for air jet loom, multiphase weaving

Total lectures required=8

Unit-5: Weft insertions of water-jet loom (2), general description of the water-jet loom (2) weft supply system, tension measuring device, water stream for weft insertion (1) fundamental problems of hydraulic weft insertion (2).

Total lectures required=8

Grand total of lectures required=38

Reference books

1.Modern development in weaving machine by Ray and Duxburg,
2.Weaving mechanism, machine and Management by Talukdar.
3.Weaving Mechanism by Robinson.
4.Modern weaving machinery Ormerd.

Laboratory work: As per the lab Syllabus

6. Departmental Elective-2

a) Fabric Structure (RTT-021) [L T P 3-1-0= 4]

Unit (1): Classification of various fabrics, construction of plain weave and its derivatives (rib and mat weave), ordinary twill, right hand twill, warp faced, weft faced & balanced twills,

Total Lectures required = 8

Unit (2): Satin regular, irregular and their extension. Combined twills, end to end and pick-to-pick combination, elongated twills, steep twills, broken twill, curved twill, Fancy twills-large diagonal shaded twills, Wave/ zig-zag,herringbone twill.

Total Lectures Required = 8

Unit (3): Regular and irregular satin, sateen base diagonals and brained twills, Diamond, mock leno, ordinary honeycomb, brighten honeycomb , Huck-a-back and crepe weave.

Total Lectures Required = 9

Unit (4): Derivatives of hopsack, barley corn stitched hopsack and twilled hopsack, Ripstop weave, Simple and wadded bed ford cords (1), weft and piques (1), principle of figuring with extra material extra warp figuring, extra weft, limitation of extra thread.

Total Lectures Required = 9

Grand Total Lectures Required = 34

Reference Book: -

1.W. Watson Textile Design & colour Longmans Greens Co. London.
2.Z.J Grosicki Watson's Textile design and colour NewnesButer Worth, London.
3.Z.J. Grosicki, Advance Textile Design Newnes Butter Worth, London.
4."Nishant" A Grammar of textile.

Laboratory work: As per the lab Syllabus

b) Multi & Long Fibre Spinning (RTT-022) [L T P 3-1-0= 4]

Unit 1: Characteristics of manmade fibres, Spinnability, blending, and its objectives, Spinnability, blending & its objectives, processing of Man- made fibres & blends on short, medium and long staple spinning systems. **Total Lectures Required = 10**

Unit 2: Spinning of dyed fibres, estimation of blends intimacy, factors affecting the blend irregularity, structural properties of blended yarns. **Total Lectures Required = 8**

Unit 3: Production of bulked yarn, characteristic difference in the physical & mechanical properties of various long staple fibres & their influence in the choice of preparatory & spinning machinery. **Total Lectures Required = 8**

Unit 4: Woolen, semi-worsted & worsted systems of spinning, retting of flax, & jute, Jute & flax spinning, manufacturing of spun silk. **Total Lectures Required = 8**

Grand total lectures required =34

Reference book:-

1.Wool Spinning by Vickerman, Abhishek Publication
2.Principle of woolen spinning by Priestman
3.Woolen & Worsted yarn manufacture by J. W Redcliff
4.Jute Spinning Calculation by Andrew Smith
5.Worsted Drawing & Spinning by Miles