First Semester (B.Tech FT)

S.No	Cat	Code	Course Title	Hrs/Week			Total Credits	Internal Marks	External Marks	Total Marks
			B.Tech Fashion Technology 1 Year (FT 1st Sem)	L	T	P				
1.	BSC	BSC-102	Chemistry – I	3	1	0	4	20	80	100
2.	BSC	BSC-103	Mathematics –I	3	1	0	4	20	80	100
3.	ESC	ESC103	Programing For Problem Solving	3	0	0	3	20	80	100
4.	HSMC	HSMC-101	English	2	0	0	2	20	80	100
LAB										
5.	HSMC	HSMC-101-P	English Language Lab	0	0	2	1	10	40	50
6.	ESC	ESC104-P	Workshop/ Manufacture Practices	1	0	4	3	20	80	100
7.	ESC	ESC-103-P	Programming For Problem Solving Lab	0	0	4	2	10	40	50
8.	BSC	BSC-102-P	Chemistry Lab	0	0	3	1.5	10	40	50
9			Induction program (Mandatory)							
	Total			12	2	13	20.5	120	480	600

Note: minimum passing marks for any subject (paper) shall be 40% in the external examination and 40% in the aggregate of internal and external examination of the subject.

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4/10/2018

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Second Semester

S.No	Cat	Code	Course Title	Hrs/Week			Total Credits	Internal Marks	External Marks	Total Marks
			B.Tech Fashion Technology 1st Year (FT 2nd Sem)						Marks	
				L	T	P				
1.	BSC	----------	Physics	3	1	0	4	20	80	100
2.	BSC	BSC-104	Mathematics -II	3	1	0	4	20	80	100
3.	ESC	ESC-101	Basic Electrical Engineering	3	1	0	4	20	80	1
LAB										
5.	BSC	BSC-101-P	Physics Lab	0	0	3	1.5	10	40	50
6.	ESC	ESC102-P	Engineering Graphics & Design	1	0	4	3	20	80	100
7.	ESC	ESC-101-P	Basic Electrical Engineering Lab	0	0	2	1	10	40	50
		Total		10	3	9	17.5	100	400	500

Physics	
BSC-101	Semi – Conductor Physics
BSC101A	Introduction To Electromagnetic Theory
BSC-101B	Introduction To Mechanics
BSC-101C	Quantum Mechanics For Engineers
BSC-101D	Oscillation, Waves And Optics
BSC-101E	Semiconductor Optoelectronics
BSC-101F	Optics, Optical Fibre, Magnetism and Quantum Mechanics *

Note: minimum passing marks for any subject (paper) shall be 40% in the external examination and 40% in the aggregate of internal and external examination of the subject.

2

.No	Cat	Code	Course Title	Hrs/Week L	T	P	Total Credits	Internal Marks	External Marks	Total Marks
			B.Tech Fashion Technology 2 Year (FT 3rd Sem)					**Marks**		
1.	Engineering Science Courses (ESC)	ESC-FTL-201A	Textile and Fibre Science	3	0		3	20	80	100
2.	Engineering Science Courses (ESC)	ESC-FTL-203A	Yarn Formation Technology	3	0		3	20	80	100
3.	Professional Core Course(PCC)	PCC-FTL-201A	Introductions to Fashion & Apparel Industry	3	0		3	20	80	100
4.	Professional Core Course(PCC)	PCC-FTL-203A	Apparel Production-I	3	0		3	20	80	100
5.	Professional Core Course(PCC)	PCC-FTL-205A	Elements of Fashion & Design	3	0		3	20	80	100
6.	Basic Science Course(BSC)	BSC-MAL-201A	Applied statistics for Fashion and Apparel	3	0		3	20	80	100
7.	Mandatory Course	BSC-233	Constitution of India** (NON-CREDIT)	3	-	-	-	10	40	50
LAB										
	Engineering Science Courses (ESC)	ESC-FTP-211A	Fibre Identification and Yarn formation	-	-	2	1	10	40	50
	Professional Core Course(Lab)	PCC-FTP-213A	Fashion Sketching and Illustration lab	-	-	2	1	10	40	50
	Professional Core Course(Lab)	PCC-FTP-215A	Elementary Garment Manufacturing Lab			2	1	10	40	50
	Total			21	6		21	150	600	750

**Constitution of India (BSC-233) is mandatory and qualifying course.

Note:
1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination

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Forth Semester (B.Tech FT)

No	Cat	Code	Course Title	Hrs/Week L	T	P	Total Credits	Internal Marks	External Marks	Total Marks
				B.Tech Fashion Technology 2 Year (FT 4th Sem)				Marks		
1.	Basic Science Course(BSC)	BSC-FTL-202A	Color Physics	3	-	-	3	20	80	100
2.	Professional Core Course(PCC)	PCC-FTL-202-A	Textile Fabric	3	-	-	3	20	80	100
3.	Professional Core Course(PCC)	PCC-FTL-204A	Design Concepts In Fashion And Apparel	3	-	-	3	20	80	100
4.	Professional Core Course(PCC)	PCC-FTL-206A	Traditional Indian Embroideries & Textiles	3	-	-	3	20	80	100
5.	Professional Core Course(PCC)	PCC-FTL-208A	Apparel production-II	3	-	-	3	20	80	100
6.	Humanities & Social Sciences Including Management(HSMC)	HSMC-FTL-202A	Merchandising and Management Function	3	-	-	3	20	80	100
7.	Mandatory Course(MC)	MC-233	Environmental Science ** (non-credit)	3	-	-	-	10	40	50
LAB										
8.	Professional Core Course(Lab)	PCC-FTP-212A	Fabric Development and Analysis Lab	-	-	2	1	10	40	50
9.	Professional Core Course(Lab)	PCC-FTP-214A	Colour and Design Practical	-	-	2	1	10	40	50
10.	Professional Core Course (Lab)	PCC-FTP-216A	Traditional Indian embroideries & Textiles Practical	-	-	2	1	10	40	50
11.	Professional Core Course (Lab)	PCC-FTP-218A	Pattern Making and Garment manufacturing Lab	-	-	2	1	10	40	50
		Total		18	8		22	160	640	800

** Environmental science non credit (MC-233) is mandatory and qualifying course.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3. Electronic gadgets including cellular phones are not allowed in the examination.

There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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S.No	Cat	Code	Course Title	Hrs/Week			Total Credit	Marks		Total Marks
				L	T	P		Internal Marks	External Marks	
	Theory									
1.	Professional Core Course(PCC)	PCC-FTL-301A	Textile Colouration Techniques	3	0	-	3	20	80	100
2.	Humanities & Social Sciences Including Management(HSMC)	HSMC-FTL-301A	Supply Chain Management	3	0	-	3	20	80	100
3.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE-I	3	0	-	3	20	80	100
4.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE-II	3	0	-	3	20	80	100
5.	Open Elective		OPEN ELECTIVE	3	0	-	3	20	80	100
6.	Mandatory Course(MC)	HSL-366*	Essence of Traditional Knowledge (Non-Credit)	3	-	-	-	10	40	50
	Lab									
7.	Professional Core Course(Lab)	PCC-FTP-311A	Pattern Making and Garment Construction Lab	-	-	2	1.0	10	40	50
8.	Professional Core Course(Lab)	PCC-FTP-313A	Textile Colouration Lab	-	-	2	1.0	10	40	50
9.	Professional Core Course(Lab)	PCC-FTP-315A	CAD Lab	-	-	2	1.0	10	40	50
10.	Project work, Seminar, Internship	PSI-FTP-311A	Industrial Practical Training	-	-	-	2.0	20	80	100
		Total		18	-	6	20	150	600	750

Total Contact Hours =24, Total Credit= 20 and Marks=750.

* HSL-366, The non-credit Mandatory Course(MC) is also being offered by dept. of ECE with same syllabus.

This course is qualifying course and marks will not be considered in degree awards.

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PROFESSIONAL ELECTIVE-I
       PEC-FTL-301A:- Knitting Structure and Design Development
       PEC-FTL-303A:- Nonwoven Technology
PROFESSIONAL ELECTIVE-II
       PEC-FTL-305A:- Fashion Accessories
       PEC-FTL-307A :- Clothing Science and Comfort

OPEN ELECTIVE
       OE-FTL-301A :- Organisational Behaviour & HRM
       OE-FTL-303A :- Soft Skill and Interpersonal communication

Note: Industrial Practical Training-I or Field Survey was conducted after fourth semester of four weeks in which student may survey the market or industry in regards to brand survey or may collect various sample of fabrics; yarn, accessories, etc in consultation with faculty members. However, Viva-Voce for evaluation of the same will be conducted in this semester.

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Six Semester (B.Tech FT)

S. No	Cat	B.Tech Fashion Technology 3rd Year (FT 6th Sem)						Marks		Total Marks
		Code	Course Title	Hrs/Week			Total Credit	Internal Marks	External Marks	
				L	T	P				
	Theory									
1.	Professional Core Course(PCC)	PCC-FTL-302A	Textile Costing and Production Planning	3	0	-	3	20	80	100
2.	Humanities & Social Sciences Including Management(HSMC)	HSMC-FTL-302A	Principles of Fashion Retailing	3	0	-	3	20	80	100
3.	Professional Core Course(PCC)	PCC-FTL-304A	Textile & Garment Testing	3	1	-	4	20	80	100
4.	Professional Core Course(PCC)	PCC-FTL-306A	Textile Printing and Finishing	3	0	-	3	20	80	100
5.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE	3	0	-	3	20	80	100
6.	Open Elective (OE)		OPEN ELECTIVE	3	0	-	3	20	80	100
	Lab									
7.	Professional Core Course(Lab)	PCC-FTP-312A	Apparel Draping and Grading Lab	-	-	2	1.0	10	40	50
8.	Professional Core Course(Lab)	PCC-FTP-314A	Textile Printing and Finishing Lab	-	-	2	1.0	10	40	50
9.	Professional Core Course(Lab)	PCC-FTP-316A	Textile and Garment Testing Lab	-	-	2	1.0	10	40	50
		Total		18	1	6	22	150	600	750

Total Contact Hours =25, Total Credit= 22 and Marks=750.

PROFESSIONAL ELECTIVE
    PEC-FTL-302A :- Apparel Marketing & Merchandising
    PEC-FTL-304A :- Apparel Quality Management

OPEN ELECTIVE
    OE-FTL-302A :- Disaster Management
    OE-FTL-304A :- Introduction to Philosophical Thoughts

NOTE: 4-6 weeks industrial training will be held after sixth semester. However, Viva-Voce will be conducted in the seventh semester.

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Seventh Semester (B.Tech FT)

S. No	Cat	Code	Course Title	Hrs/Week			Total Credit	Marks		Total Marks
				L	T	P		Internal Marks	External Marks	
	Theory									
1.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE	3	0	-	3	20	80	100
2.	Open Elective (OE)		OPEN ELECTIVE – I	3	0	-	3	20	80	100
3.	Open Elective (OE)		OPEN ELECTIVE – II	3	0	-	3	20	80	100
	Lab									
4.	Professional Core Course(Lab)	PCC-FTP-411A	Advance Construction and Home Fashion Lab	-	-	2	1.0	10	40	50
5.	Professional Core Course(Lab)	PCC-FTP-413A	Application of Computer Software for Garment Manufacturing	-	-	2	1.0	10	40	50
6.	Project work, Seminar, Internship	PSI-FTP-411A	Industrial Practical Training-II	-	-	-	2.0	20	80	100
7.	Project work, Seminar, Internship	PSI-FTP-413A	Minor Project	-	-	3	3.0	20	80	100
		Total		9		7	16	120	480	600

Total Contact Hours =16, Total Credit= 16 and Marks=600.

PROFESSIONAL ELECTIVE
   PEC-FTL-401A :- Home Textile
   PEC-FTL-403A :- Fashion Communication
OPEN ELECTIVE - I
   OE-FTL-401A :- Principles of Management
   OE-FTL-403A :- Environmental Pollution Control
OPEN ELECTIVE - II
   OE-FTL-405A :- History of Science & Engineering
   OE-FTL-407A :- Historic Costume

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S. No	Cat	Code	Course Title	Hrs/Week			Total Credit	Internal Marks	External Marks	Total Marks
				L	T	P				
	Theory									
1.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE - I	3	0	-	3	20	80	100
2.	Professional Elective Course(PEC)		PROFESSIONAL ELECTIVE - II	3	0	-	3	20	80	100
3.	Open Elective (OE)		OPEN ELECTIVE – I	3	0	-	3	20	80	100
4.	Open Elective (OE)		OPEN ELECTIVE – II	3	0	-	3	20	80	100
	Lab									
5.	Professional Core Course(Lab)	PCC-FTP-412A	Advance Apparel Construction with Fashion Accessories Lab	-	-	2	1.0	10	40	50
6.	Project work, Seminar, Internship	PSI-FTP-412A	Major Project	-	-	4	4.0	20	80*	100
7.	Project work, Seminar, Internship	PSI-FTP-414A	Art Port Folio with presentation	-	-	4	4.0	20	80	100
		Total		12		10	21	130	520	650

Total Contact Hours =22, Total Credit = 20 and Marks=650.

PROFESSIONAL ELECTIVE - I
>   PEC-FTL-402A :- Sustainable Fashion
>   PEC-FTL-404A :- Automation In Apparel Industry

PROFESSIONAL ELECTIVE - II
>   PEC-FTL-406A :- Smart Textile
>   PEC-FTL-408A :- Apparel Export and Business Environment

OPEN ELECTIVE – I
>   OE-FTL-402A :- Entrepreneurship Development
>   OE-FTL-404A :- Economics Policies of India

OPEN ELECTIVE – II
>   OE-FTL-406A :- Human Resource Management and IPR
>   OE-FTL-408A :- Professional Ethics and Human Values

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Total Project load will be divided amongst the faculty members as per the students/batches supervised by him or her.

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S.No	Grand Total of Credits and Marks for the B.Tech Fashion Technology, BPSMV Khanpur Kalan	
	Semester	Credits/Marks
1.	I	20.5/ 600
2.	II	17.5/ 500
3.	III	21/ 750
4.	IV	22/ 800
5.	V	20/ 750
6.	VI	22/ 750
7.	VII	16/ 600
8.	VIII	21/ 650
Total		160/5400
All end examinations (Theory & Practical) are of three hours duration		

Note:

1. The minimum passing marks for any subject (paper) shall be 40 % in the external examination and 40% in the aggregate of internal and external examination of the subject. In case student (s) fails to acquire 40% in the aggregate of internal and external of a subject (paper), she will be awarded re-appear in the external examination of that paper.

2. There will be no reappear in internal examination. Marks obtained in internal examination/ assessment shall be carried forwarded in case of re-appear (either less than 40% in external or less than 40% in aggregate of internal and external).

3. Weight age for internal assessment (examination):
   (a) Internal test   10% of the total marks 100 ie 10 Marks
   (b) Assignment/Seminar/Quiz/Group Disc., etc at 5% of the total marks 100 ie 05 Marks
   (c) Attendance   5% of the total marks 100 ie 05 Marks
       Less than 75%   00 Marks
       75% and above and less than 80%   02 Marks
       80% and above and less than 85%   03 Marks
       85% and above   05 Marks

   Detailed information is available in UG ordinance.

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Program Outcomes of B. Tech in Fashion Technology

PO of B. Tech in Fashion Technology

PO1: To be capable of Apply knowledge of science, mathematics and engineering to troubleshoot and solve Fashion, Textile and allied industry problems

PO2: Understand Design system components, processes and products to meet the desired needs with appropriate practical considerations

PO 3: To make the students to be capable to Create, select, and apply techniques with sustainable utilization of resources, modern engineering and IT tools.

PO4: Apply reasonable information by the contextual knowledge to assess environmental, societal, health, safety, legal and cultural issues and the consequent responsibilities appropriate to the professional engineering practice

PO5: Understand the sustainable development and demonstrate the knowledge to give an impact of the professional engineering solutions in societal and environmental contexts.

PO6: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice1

PO7: Communicate effectively on complex engineering activities, demonstrate knowledge and understanding of the engineering and management principles, finance, branding and marketing principles and apply these to manage projects in multidisciplinary environments.

PO8: Need to have the base and ability to engage in independent and life-long learning in the broadest context of technological change.

PO9: To develop leadership and problem solving skills in graduates to make them industry ready.

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Program Specific Outcomes of B.Tech (Fashion Technology)

PSO of B.Tech (Fashion Technology)

PSO 1: Become competitive industry ready technocrats through strong industry connection so as to employed in worldwide apparel/fashion and home fashion industries.

PSO2: Design and develop the strategies required to manage the garment and fashion industries and also able to solve the real time problems in context of same.

PSO3: To be capable apply knowledge of Fashion sketching/illustration, CAD/CAM-pattern making and Garment Manufacturing in the specialized area of Fashion and Apparel Sector.

PSO4: To serve the fashion industries efficiently graduates will be capable to handle Design system components, processes and products to meet the desired needs with appropriate practical considerations.

PSO5: To impart comprehensive knowledge in Garment Manufacturing processes and quality assurance aspects necessary for successful career in industry and higher studies.

PSO6: To encourage innovation and entrepreneurship in Fashion Engineering.

PSO7: To inculcate professional, ethical and sustainable practices of garment construction in undergraduate students.

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Semester-1

CODE: BSC-102
Chemistry- I
CREDITS: 4

B.TECH. 1ST SEMESTER

L T P

3 1 0

INTERNAL MARKS: 20

EXTERNAL MARKS: 80

TOTAL: 100

Pre-requisites (if any) - Basics of Chemistry .

UNIT- 1

Module 1:Atomic and molecular structure (12 lectures)

Schrodinger equation. Particle in a box solutions and their applications for conjugated molecules and nanoparticles. Forms of the hydrogen atom wave functions and the plots of these functions to explore their spatial variations.Molecular orbitals of diatomic molecules and plots of the multicenter orbitals.Equations for atomic and molecular orbitals. Energy level diagrams of diatomic. Pi-molecular orbitals of butadiene and benzene and aromaticity.Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties.Band structure of solids and the role of doping on band structures.

UNIT- 2

Module 2:Spectroscopic techniques and applications (8 lectures)

Principles of spectroscopy and selection rules.Electronic spectroscopy.Fluorescence and its applications in medicine.Vibrational and rotational spectroscopy of diatomic molecules.Applications.Nuclear magnetic resonance and magnetic resonance imaging, surface characterisation techniques.Diffraction and scattering.

Module 3:Intermolecular forces and potential energy surfaces (4 lectures)

Ionic, dipolar and van Der Waals interactions.Equations of state of real gases and critical phenomena. Potential energy surfaces of H3, H2F and HCN and trajectories on these surfaces.

3

UNIT- 3

Module 4: Use of free energy in chemical equilibria (6 lectures)

Thermodynamic functions: energy, entropy and free energy. Estimations of entropy and free energies. Free energy and emf. Cell potentials, the Nernst equation and applications. Acid base, oxidation reduction and solubility equilibria. Water chemistry. Corrosion. Use of free energy considerations in metallurgy through Ellingham diagrams.

Module 5: Periodic properties (4 Lectures)

Effective nuclear charge, penetration of orbitals, variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations, atomic and ionic sizes, ionization energies, electron affinity and electronegativity, polarizability, oxidation states, coordination numbers and geometries, hard soft acids and bases, molecular geometries

UNIT- 4

Module 6: Stereochemistry (4 lectures)

Representations of 3 dimensional structures, structural isomers and stereoisomers, configurations and symmetry and chirality, enantiomers, diastereomers, optical activity, absolute configurations and conformational analysis. Isomerism in transitional metal compounds

Module 7: Organic reactions and synthesis of a drug molecule (4 lectures)

Introduction to reactions involving substitution, addition, elimination, oxidation, reduction, cyclization and ring openings. Synthesis of a commonly used drug molecule.

Suggested Text Books

(i)   University chemistry, by B. H. Mahan

(ii) Chemistry: Principles and Applications, by M. J. Sienko and R. A. Plane

(iii) Fundamentals of Molecular Spectroscopy, by C. N. Banwell

(iv) Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan

(v)   Physical Chemistry, by P. W. Atkins (vi) Organic Chemistry: Structure and Function by K.P.C.Volhardt and N. E. Schore, 5th Edition http://bcs.whfreeman.com/vollhardtschore5e/default.asp

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Course Outcomes

The concepts developed in this course will aid in quantification of several concepts in chemistry that have been introduced at the 10+2 levels in schools. Technology is being increasingly based on the electronic, atomic and molecular level modifications.

Quantum theory is more than 100 years old and to understand phenomena at nanometerlevels, one has to base the description of all chemical processes at molecular levels. The course will enable the student to:

- Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
- Rationalise bulk properties and processes using thermodynamic considerations.
- Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
- Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
- List major chemical reactions that are used in the synthesis of molecules.

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

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CODE: BSC -103
Mathematics- I: Calculus and Linear Algebra
CREDITS: 4

B.TECH. 1ˢᵗ SEMESTER

L   T   P

3   1   0

INTERNAL MARKS: 20

EXTERNAL MARKS: 80

TOTAL: 100

UNIT- 1

Module 1: Calculus: (6 lectures)

Evolutes and involutes; Evaluation of definite and improper integrals; Beta and Gamma functions and their properties; Applications of definite integrals to evaluate surface areas and volumes of revolutions.

Module 2: Calculus: (6 lectures)

Rolle's Theorem, Mean value theorems, Taylor's and Maclaurin theorems with remainders; Indeterminate forms and L'Hospital's rule; Maxima and minima.

UNIT- 2

Module 3: Matrices (in case vector spaces is to be taught) (8 lectures)

Matrices, vectors: addition and scalar multiplication, matrix multiplication; Linear systems of equations, linear Independence, rank of a matrix, determinants, Cramer's Rule, inverse of a matrix, Gauss elimination and Gauss-Jordan elimination.

UNIT- 3

Module 4: Vector spaces (Prerequisite Module 3-Matrices) (10 hours)

Vector Space, linear dependence of vectors, basis, dimension; Linear transformations (maps), range and kernel of a linear map, rank and nullity, Inverse of a linear transformation, rank nullity theorem, composition of linear maps, Matrix associated with a linear map.

UNIT- 4

Module 5: Vector spaces (Prerequisite Module 3 –Matrices & Module-4 Vector spaces) (10 lectures)

Eigenvalues, eigenvectors, symmetric, skew-symmetric, and orthogonal Matrices, eigenbases.Diagonalization; Inner product spaces, Gram-Schmidt orthogonalization.

Suggested Text/Reference Books

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint,

2002.

2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

3. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.

4. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.

5. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

6. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.

7. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.

8. V. Krishnamurthy, V.P. Mainra and J.L. Arora, An introduction to Linear Algebra, Affiliated East–West press, Reprint 2005.

Course Outcomes

The objective of this course is to familiarize the prospective engineers with techniques in basic calculus and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.

The students will learn:

- To apply differential and integral calculus to notions of curvature and to improper integrals. Apart from various applications, they will have a basic understanding of Beta and Gamma functions.

- The essential tools of matrices and linear algebra including linear transformations, eigenvalues, diagonalization and orthogonalization.

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

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CODE: ESC - 103
Programming for problem solving
CREDITS: 3

B.TECH. 1ST SEMESTER

L   T   P

3   0   0

INTERNAL MARKS: 20

EXTERNAL MARKS: 80

TOTAL: 100

Pre-requisites (if any) - Basics of Computers, Algorithms and flowcharts.

UNIT- 1

Introduction to Programming (4 lectures)

Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.) - (1 lecture). Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples. (1 lecture) From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code- (2 lectures)

Arithmetic expressions and precedence (2 lectures)

UNIT- 2

Conditional Branching and Loops (6 lectures) Writing and evaluation of conditionals and consequent branching (3 lectures) Iteration and loops (3 lectures)

Arrays (6 lectures) Arrays (1-D, 2-D), Character arrays and Strings

Basic Algorithms (6 lectures) Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required)

UNIT- 3

Function (5 lectures)

Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference

Recursion (4 -5 lectures) Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.

UNIT- 4

Structure (4 lectures) Structures, Defining structures and Array of Structures

8

Pointers (2 lectures) Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation)

File handling (only if time is available, otherwise should be done as part of the lab)

Suggested Text Books

  (i)   Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill

  (ii)   E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill

Suggested Reference Books

(i) Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

Course Outcomes

The student will learn

- To formulate simple algorithms for arithmetic and logical problems.

- To translate the algorithms to programs (in C language).

- To test and execute the programs and correct syntax and logical errors.

- To implement conditional branching, iteration and recursion.

- To decompose a problem into functions and synthesize a complete program using divide and conquer approach.

- To use arrays, pointers and structures to formulate algorithms and programs.

- To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.

- To apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and simple integration.

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

CODE: HSMC -101

English

CREDITS: 2

B.TECH. 1ST SEMESTER

L T P

2 0 0

INTERNAL MARKS: 10

EXTERNAL MARKS: 40

TOTAL: 50

UNIT- 1

Module 1: Vocabulary Building

1.1 The concept of Word Formation 1.2 Root words from foreign languages and their use in English 1.3 Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives. 1.4 Synonyms, antonyms, and standard abbreviations.

Module2: Basic Writing Skills

2.1 Sentence Structures 2.2 Use of phrases and clauses in sentences 2.3 Importance of proper punctuation 2.4 Creating coherence 2.5 Organizing principles of paragraphs in documents 2.6 Techniques for writing precisely

UNIT- 2

Module 3: Identifying Common Errors in Writing

3.1 Subject-verb agreement 3.2 Noun-pronoun agreement 3.3 Misplaced modifiers 3.4 Articles 3.5 Prepositions 3.6 Redundancies 3.7 Clichés

UNIT- 3

Module 4: Nature and Style of sensible Writing

4.1 Describing 4.2 Defining 4.3 Classifying 4.4 Providing examples or evidence 4.5 Writing introduction and conclusion

UNIT- 4

Module 5: Writing Practices

5.1 Comprehension 5.2 Précis Writing 5.3 Essay Writing

Module 6: Oral Communication

(This unit involves interactive practice sessions in Language Lab)

- Listening Comprehension
- Pronunciation, Intonation, Stress and Rhythm
- Common Everyday Situations: Conversations and Dialogues

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- Communication at Workplace
- Interviews
- Formal Presentations

Suggested Readings:

(i)   Practical English Usage. Michael Swan. OUP. 1995.

(ii) Remedial English Grammar. F.T. Wood. Macmillan.2007

(iii) On Writing Well. William Zinsser. Harper Resource Book. 2001

(iv) Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.

(v)   Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011.

(vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

Course Outcomes

The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

English Language Lab

CREDITS: 1

B.TECH. 1ST SEMESTER

L   T   P

0   0   2

INTERNAL MARKS:	10
PRACTICAL EXAM:	40
TOTAL:	50

Oral Communication

Interactive practice sessions in Language Lab

- Listening Comprehension
- Pronunciation, Intonation, Stress and Rhythm
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations

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CODE: ESC -104-P
Workshop / Manufacturing Practices
CREDITS: 3

B.TECH. 1ST SEMESTER		

INTERNAL MARKS: 20

EXTERNAL MARKS: 80

L T P

TOTAL: 100

1 0 4

1. Manufacturing Methods- casting, forming, machining, joining, advanced manufacturing methods (3 lectures)
2. CNC machining, Additive manufacturing (1 lecture)
3. Fitting operations & power tools (1 lecture)
4. Electrical &Electronics (1 lecture)
5. Carpentry (1 lecture)
6. Plastic moulding, glass cutting (1 lecture)
7. Metal casting (1 lecture)
8. Welding (arc welding & gas welding), brazing (1 lecture)

Suggested Text/Reference Books:

(i) HajraChoudhury S.K., HajraChoudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.

(ii) Kalpakjian S. And Steven S. Schmid, "Manufacturing Engineering and Technology", 4th edition, Pearson Education India Edition, 2002.

(iii) Gowri P. Hariharan and A. Suresh Babu,"Manufacturing Technology – I" Pearson Education, 2008.

(iv) Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998.

(v) Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGrawHill House, 2017.

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Course Outcomes

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

Workshop Practice

1. Machine shop (10 hours)
2. Fitting shop (8 hours)
3. Carpentry (6 hours)
4. Electrical &Electronics(8 hours)
5. Welding shop (8 hours (Arc welding 4 hrs + gas welding 4 hrs)
6. Casting (8 hours)
7. Smithy (6 hours)
8. Plastic moulding& Glass Cutting (6 hours)

Examinations could involve the actual fabrication of simple components, utilizing one or more of the techniques covered above.

Laboratory Outcomes

- Upon completion of this laboratory course, students will be able to fabricate components with their own hands. They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes. By assembling different components, they will be able to produce small devices of their interest.

Programming for problem solving Lab

CREDITS: 2

B.TECH. 1ST SEMESTER

L T P

0 0 4

INTERNAL MARKS: 10

PRACTICAL EXAM: 40

TOTAL: 50

The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.

Tutorial 1: Problem solving using computers: Lab1: Familiarization with programming environment

Tutorial 2: Variable types and type conversions: Lab 2: Simple computational problems using arithmetic expressions

Tutorial 3: Branching and logical expressions: Lab 3: Problems involving if-then-else structures

Tutorial 4: Loops, while and for loops: Lab 4: Iterative problems e.g., sum of series

Tutorial 5: 1D Arrays: searching, sorting: Lab 5: 1D Array manipulation

Tutorial 6: 2D arrays and Strings Lab 6: Matrix problems, String operations

Tutorial 7: Functions, call by value: Lab 7: Simple functions

Tutorial 8 &9: Numerical methods (Root finding, numerical differentiation, numerical integration): Lab 8 and 9: Programming for solving Numerical methods problems

Tutorial 10: Recursion, structure of recursive calls Lab 10: Recursive functions

Tutorial 11: Pointers, structures and dynamic memory allocation Lab 11: Pointers and structures

Tutorial 12: File handling: Lab 12: File operations

Laboratory Outcomes

- To formulate the algorithms for simple problems
- To translate given algorithms to a working and correct program
- To be able to correct syntax errors as reported by the compilers
- To be able to identify and correct logical errors encountered at run time
- To be able to write iterative as well as recursive programs

- To be able to represent data in arrays, strings and structures and manipulate them through a program
- To be able to declare pointers of different types and use them in defining self- referential structures.
- To be able to create, read and write to and from simple text files.

Chemistry Lab

CREDITS: 1.5

B.TECH. 1ST SEMESTER		

	INTERNAL MARKS:	10
L T P	EXTERNAL MARKS	40
0 0 3	TOTAL:	50

Choice of 10-12 experiments from the following:

1. Determination of surface tension and viscosity
2. Thin layer chromatography
3. Ion exchange column for removal of hardness of water
4. Determination of chloride content of water
5. Colligative properties using freezing point depression
6. Determination of the rate constant of a reaction
7. Determination of cell constant and conductance of solutions
8. Potentiometry– determination of redox potentials and emfs
9. Synthesis of a polymer/drug
10. Saponification/acid value of an oil
11. Chemical analysis of a salt
12. Lattice structures and packing of spheres
13. Models of potential energy surfaces
14. Chemical oscillations- Iodine clock reaction
15. Determination of the partition coefficient of a substance between two immiscible liquids
16. Adsorption of acetic acid by charcoal
17. Use of the capillary viscosimeters to the demonstrate of the isoelectric point as the pH of minimum viscosity for gelatin sols and/or coagulation of the white part of egg .

Laboratory Outcomes

The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.

The students will learn to:

- Estimate rate constants of reactions from concentration of reactants/products as a function of time
- Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
- Synthesize a small drug molecule and analyse a salt sample

CODE: BSC-101
Semi Conductor Physics
CREDITS: 4

B.TECH. 2nd SEMESTER		INTERNAL MARKS:	20
L	T	P	EXTERNAL MARKS: 80
3	1	0	TOTAL: 100

Prerequisite: "Introduction to Quantum Mechanics" Desirable

UNIT- 1

Module 1: Electronic materials (8)

Free electron theory, Density of states and energy band diagrams, Kronig-Penny model (to introduce origin of band gap), Energy bands in solids, E-k diagram, Direct and indirect bandgaps, Types of electronic materials: metals, semiconductors, and insulators, Density of states, Occupation probability, Fermi level, Effective mass, Phonons.

Module 2: Semiconductors (10)

Intrinsic and extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction, Metal-semiconductor junction (Ohmic and Schottky), Semiconductor materials of interest for optoelectronic devices.

UNIT- 2

Module 3: Light-semiconductor interaction (6)

Optical transitions in bulk semiconductors: absorption, spontaneous emission, and stimulated emission; Joint density of states, Density of states for photons, Transition rates (Fermi's golden rule), Optical loss and gain; Photovoltaic effect, Exciton, Drude model.

UNIT- 3

Module 4: Measurements (6)

Four-point probe and van der Pauw measurements for carrier density, resistivity, and hall mobility; Hot-point probe measurement, capacitance-voltage measurements, parameter extraction from diode I-V characteristics, DLTS, band gap by UV-Vis spectroscopy,absorption/transmission.

Module 5: Engineered semiconductor materials (6)

Density of states in 2D, 1d and 0D (qualitatively). Practical examples of low-dimensional systems such as quantum wells, wires, and dots: design, fabrication, and characterization techniques. Heterojunctions and associated band-diagrams

References:

1. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc. (1995).

2. B. E. A. Saleh and M. C. Teich, Fundamentals of Photonics, John Wiley & Sons, Inc., (2007).

3. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008).

4. A. Yariv and P. Yeh, Photonics: Optical Electronics in Modern Communications, Oxford University Press, New York (2007).

5. P. Bhattacharya, Semiconductor Optoelectronic Devices, Prentice Hall of India (1997).

6. Online course: "Semiconductor Optoelectronics" by M R Shenoy on NPTEL

7. Online course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta on NPTEL

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

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Mathematics-II: Probability and Statistics

CREDITS: 4

B.TECH. 2ⁿᵈ SEMESTER

L T P

3 1 0

SESSIONAL: 20

EXTERNAL MARKS: 80

TOTAL: 100

Pre-requisites (if any) - Basics of Statistics.

UNIT- 1

Module 1: Basic Probability: (12 lectures)

Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality.

UNIT- 2

Module 2: Continuous Probability Distributions: (4 lectures)

Continuous random varibales and their properties, distribution functions and densities, normal, exponential and gamma densities.

Module 3: Bivariate Distributions: (4 lectures)

Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule.

UNIT- 3

Module 4: Basic Statistics: (8 lectures)

Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression – Rank correlation.

Module 5: Applied Statistics: (4 lectures)

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.

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UNIT- 4

Applied Statistics: (4 lectures):

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations.

Module 6: Small samples: (4 lectures)

Test for single mean, difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.

Suggested Text/Reference Books

(i)   Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

(ii)   P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint).

(iii) S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.

(iv)   W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed., Wiley, 1968.

(v)   N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.

(vi)   B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.

(vii) Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.

Course Outcomes

The objective of this course is to familiarize the students with statistical techniques. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.

The students will learn:

- The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.

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- The basic ideas of statistics including measures of central tendency, correlation and regression.
- The statistical methods of studying data samples.

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

CODE: ESC- 101

Basic Electrical Engineering

CREDITS: 4

B.TECH. 2nd SEMESTER

L T P

3 1 0

INTERNAL MARKS: 20

EXTERNAL MARKS: 80

TOTAL: 100

UNIT- 1

Module 1: DC Circuits (8 hours)

Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation.Superposition, Thevenin and Norton Theorems.Time-domain analysis of first-order RL and RC circuits.

Module 2: AC Circuits (8 hours)

Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT- 2

Module 3: Transformers (6 hours)

Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency.Auto-transformer and three-phase transformer connections.

UNIT- 3

Module 4: Electrical Machines (8 hours)

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

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UNIT- 4

Module 5: Power Converters (6 hours)

DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.

Module 6: Electrical Installations (6 hours)

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

Suggested Text / Reference Books

(i) D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.

(ii) D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.

(iii) L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.

(iv) E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.

(v) V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

Course Outcomes

- To understand and analyze basic electric and magnetic circuits
- To study the working principles of electrical machines and power converters.
- To introduce the components of low voltage electrical installations

Note: Nine questions will be set in all by the examiners taking two questions from each unit and one question containing short answer type questions from entire syllabus. Students will be required to attempt five questions, selecting one question from each unit. Question No.1 is compulsory which is from entire syllabus.

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Physics Lab

CREDITS: 1.5

B.TECH. 2nd SEMESTER

L T P

0   0 3

INTERNAL MARKS: 10

EXTERNAL MARKS: 40

TOTAL: 50

List of Experiments

1. To find the capacitance of unknown capacitor using flashing and quenching of Argon bulb.
2. To study the photoconducting cell and hence to verity the inverse square law.
3. To study the characteristics of a solar cell and to find the fill factor.
4. To find the value of Planck's constant by using a photo electric cell.
5. To find the value of Hall Co-efficient of semi-conductor.
6. To study the V-I characteristics of a p-n diode.
7. To find the band gap of intrinsic semi-conductor using four probe method.
8. To convert given galvanometer into an ammeter and voltmeter of given range.
9. To determine the wavelength of sodium light by Newton's rings experiment.
10. To find the Specific rotation of sugar solution by using Polarimeter.
11. To find the refractive of a material of a given prism using spectrometer.
12. To study rectification properties of a semiconductor.
13. Study of Characteristics of p-i-n and avalanche photo diode detectors.
14. To determine the resistivity of a semiconductor by four probe method.
15. To find the wavelength of various colours of white light with the help of a plane transmission diffracting grating

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Engineering Graphics & Design (Theory & Lab)

CREDITS: 3

B.TECH. 2nd SEMESTER	INTERNAL MARKS:	20
L T P	EXTERNAL MARKS:	80
1 0 4	TOTAL:	100

Engineering Graphics & Design [A total of 10 lecture hours & 60 hours of lab.]

Traditional Engineering Graphics:

Principles of Engineering Graphics; Orthographic Projection; Descriptive Geometry; Drawing Principles; Isometric Projection; Surface Development; Perspective; Reading a Drawing; Sectional Views; Dimensioning & Tolerances; True Length, Angle; intersection, Shortest Distance.

Computer Graphics:

Engineering Graphics Software; -Spatial Transformations; Orthographic Projections; Model Viewing; Co-ordinate Systems; Multi-view Projection; Exploded Assembly; Model Viewing; Animation; Spatial Manipulation; Surface Modelling; Solid Modelling; Introduction to Building Information Modelling (BIM)

(Except the basic essential concepts, most of the teaching part can happen concurrently in the laboratory)

Unit 1: Introduction to Engineering Drawing covering, Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections including the Rectangular Hyperbola (General method only); Cycloid, Epicycloid, Hypocycloid and Involute; Scales – Plain, Diagonal and Vernier Scales;Orthographic Projections covering, Principles of Orthographic Projections-Conventions - Projections of Points and lines inclined to both planes; Projections of planes inclined Planes - Auxiliary Planes;

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Unit 2: Projections of Regular Solids covering, those inclined to both the Planes- Auxiliary Views; Draw simple annotation, dimensioning and scale. Floor plans that include: windows, doors, and fixtures such as WC, bath, sink, shower, etc. Sections and Sectional Views of Right Angular Solids covering, Prism, Cylinder, Pyramid, Cone – Auxiliary Views; Development of surfaces of Right Regular Solids - Prism, Pyramid, Cylinder and Cone; Draw the sectional orthographic views of geometrical solids, objects from industry and dwellings (foundation to slab only), Isometric Projections covering, Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions;

Unit 3: Overview of Computer Graphics covering, listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software [such as: The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.; Isometric Views of lines, Planes, Simple and compound Solids];Customisation& CAD Drawing consisting of set up of the drawing page and the printer, including scale settings, Setting up of units and drawing limits; ISO and ANSI standards for coordinate dimensioning and tolerancing; Orthographic constraints, Snap to objects manually and automatically; Producing drawings by using various coordinate input entry methods to draw straight lines, Applying various ways of drawing circles;

Unit 4: Annotations, layering & other functionscovering applying dimensions to objects, applying annotations to drawings; Setting up and use of Layers, layers to create drawings, Create, edit and use customized layers; Changing line lengths through modifying existing lines (extend/lengthen); Printing documents to paper using the print command; orthographic projection techniques; Drawing sectional views of composite right regular geometric solids and project the true shape of the sectioned surface; Drawing annotation, Computer-aided design (CAD) software modeling of parts and assemblies. Parametric and non-parametric solid, surface, and wireframe models.Part editing and two-dimensional documentation of models.Planar projection theory, including sketching of perspective, isometric, multiview, auxiliary, and section views. Spatial visualization exercises. Dimensioning guidelines, tolerancing techniques;

dimensioning and scale multi views of dwelling;Demonstration of a simple team design project that illustrates Geometry and topology of engineered components: creation of engineering models and their presentation in standard 2D blueprint form and as 3D wire-frame and shaded solids; meshed topologies for engineering analysis and tool-path generation for component manufacture; geometric dimensioning and tolerancing; Use of solid-modeling software for creating associative models at the component and assembly levels; floor plans that include: windows, doors, and fixtures such as WC, bath, sink, shower, etc. Applying colour coding according to building drawing practice; Drawing sectional elevation showing foundation to ceiling; Introduction to Building Information Modelling (BIM).

Suggested Text/Reference Books:

(i) Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House

(ii) Shah, M.B. &Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education

(iii)Agrawal B. &Agrawal C. M. (2012), Engineering Graphics, TMH Publication

(iv) Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers

(v) (Corresponding set of) CAD Software Theory and User Manuals

Course Outcomes

All phases of manufacturing or construction require the conversion of new ideas and design concepts into the basic line language of graphics. Therefore, there are many areas (civil, mechanical, electrical, architectural and industrial) in which the skills of the CAD technicians play major roles in the design and development of new products or construction. Students prepare for actual work situations through practical training in a new state-of-the-art computer designed CAD laboratory using engineering software.

This course is designed to:

- To prepare you to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

- To prepare you to communicate effectively
- To prepare you to use the techniques, skills, and modern engineering tools necessary for engineering practice

The student will learn :

- Introduction to engineering design and its place in society
- Exposure to the visual aspects of engineering design
- Exposure to engineering graphics standards
- Exposure to solid modelling
- Exposure to computer-aided geometric design
- Exposure to creating working drawings
- Exposure to engineering communication

CODE: ESC -101- P

Basic Electrical Engineering Lab

CREDITS: 1

B.TECH.2nd SEMESTER	INTERNAL MARKS:	10
L T P	EXTERNAL MARKS:	40
0 0 2	TOTAL:	50

List of experiments/demonstrations:

- Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.

- Measuring the steady-state and transient time-response of R-L, R-C, and R-L-C circuits to a step change in voltage (transient may be observed on a storage oscilloscope). Sinusoidal steady state response of R-L, and R-C circuits – impedance calculation and verification. Observation of phase differences between current and voltage. Resonance in R-L-C circuits.

- Transformers: Observation of the no-load current waveform on an oscilloscope (nonsinusoidal wave-shape due to B-H curve nonlinearity should be shown along with a discussion about harmonics). Loading of a transformer: measurement of primary and secondary voltages and currents, and power.

- Three-phase transformers: Star and Delta connections. Voltage and Current relationships (line-line voltage, phase-to-neutral voltage, line and phase currents). Phase-shifts between the primary and secondary side. Cumulative three-phase power in balanced three-phase circuits.

- Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.

- Torque Speed Characteristic of separately excited dc motor.

- Synchronous speed of two and four-pole, three-phase induction motors. Direction reversal by change of phase-sequence of connections. Torque-Slip Characteristic of an

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induction motor. Generator operation of an induction machine driven at supersynchronous speed.

- Synchronous Machine operating as a generator: stand-alone operation with a load. Control of voltage through field excitation.
- Demonstration of (a) dc-dc converters (b) dc-ac converters – PWM waveform (c) the use of dc-ac converter for speed control of an induction motor and (d) Components of LT switchgear.

Laboratory Outcomes

- Get an exposure to common electrical components and their ratings.
- Make electrical connections by wires of appropriate ratings.
- Understand the usage of common electrical measuring instruments.
- Understand the basic characteristics of transformers and electrical machines.
- Get an exposure to the working of power electronic converters.

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BSC-101A   **Introduction to Electromagnetic Theory**   **Total Credits: 4**

L T P

3 1 -   **Total Marks: 100**

External Marks: 80

Internal Marks: 20

Theory Prerequisite: Mathematics course with vector calculus

Unit 1: Electrostatics in vacuum: Calculation of electric field and electrostatic potential for a charge distribution; Divergence and curl of electrostatic field; Laplace's and Poisson's equations for electrostatic potential and uniqueness of their solution and connection with steady state diffusion and thermal conduction; Practical examples like Farady's cage and coffee-ring effect; Boundary conditions of electric field and electrostatic potential; method of images; energy of a charge distribution and its expression in terms of electric field.

Electrostatics in a linear dielectric medium: Electrostatic field and potential of a dipole. Bound charges due to electric polarization; Electric displacement; boundary conditions on displacement; Solving simple electrostatics problems in presence of dielectrics – Point charge at the centre of a dielectric sphere, charge in front of a dielectric slab, dielectric slab and dielectric sphere in uniform electric field.

Unit 2: Magnetostatics: Bio-Savart law, Divergence and curl of static magnetic field; vector potential and calculating it for a given magnetic field using Stokes' theorem; the equation for the vector potential and its solution for given current densities.

Magnetostatics in a linear magnetic medium: Magnetization and associated bound currents; auxiliary magnetic field $\vec{H}$; Boundary conditions on $\vec{B}$ and $\vec{H}$. Solving for magnetic field due to simple magnets like a bar magnet; magnetic susceptibility and ferromagnetic, paramagnetic and diamagnetic materials; Qualitative discussion of magnetic field in presence of magnetic materials.

Unit 3: Faraday's law: Faraday's law in terms of EMF produced by changing magnetic flux; equivalence of Faraday's law and motional EMF; Lenz's law; Electromagnetic breaking and its applications; Differential form of Faraday's law expressing curl of electric field in terms of time-derivative of magnetic field and calculating electric field due to changing magnetic fields in quasi-static approximation; energy stored in a magnetic field.

Continuity equation for current densities; Modifying equation for the curl of magnetic field to satisfy continuity equation; displace current and magnetic field arising from time-dependent electric field; calculating magnetic field due to changing electric fields in quasi-static approximation.

Unit 4: Maxwell's equations

Maxwell's equation in vacuum and non-conducting medium; Energy in an electromagnetic field; Flow of energy and Poynting vector with examples. Qualitative discussion of momentum in electromagnetic fields.

Electromagnetic waves: The wave equation; Plane electromagnetic waves in vacuum, their transverse nature and polarization; relation between electric and magnetic fields of an electromagnetic wave; energy carried by electromagnetic waves and examples. Momentum carried by electromagnetic waves and resultant pressure. Reflection and transmission of electromagnetic waves from a non-conducting medium-vacuum interface for normal incidence.

Text Book:

(i) David Griffiths, Introduction to Electrodynamics

Reference books:

1. Halliday and Resnick, Physics
2. W. Saslow, Electricity, magnetism and light

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BSC-101B   **Introduction to Mechanics**   Total Credits: 4

L T P

3 1 -   Total Marks: 100

External Marks: 80

Internal Marks: 20

Prerequisites: (i) High-school education

Unit 1:

Transformation of scalars and vectors under Rotation transformation; Forces in Nature; Newton's laws and its completeness in describing particle motion; Form invariance of Newton's Second Law; Solving Newton's equations of motion in polar coordinates; Problems including constraints and friction; Extension to cylindrical and spherical coordinates

Unit 2:

Potential energy function; F = - Grad V, equipotential surfaces and meaning of gradient; Conservative and non-conservative forces, curl of a force field; Central forces; Conservation of Angular Momentum; Energy equation and energy diagrams; Elliptical, parabolic and hyperbolic orbits; Kepler problem; Application: Satellite manoeuvres; Non-inertial frames of reference; Rotating coordinate system: Five-term acceleration formula- Centripetal and Coriolis accelerations; Applications: Weather systems, Foucault pendulum;

Unit 3:

Harmonic oscillator; Damped harmonic motion – over-damped, critically damped and lightly-damped oscillators; Forced oscillations and resonance, Definition and motion of a rigid body in the plane; Rotation in the plane; Kinematics in a coordinate system rotating and translating in the plane; Angular momentum about a point of a rigid body in planar motion; Euler's laws of motion, their independence from Newton's laws, and their necessity in describing rigid body motion; Examples

Unit 4:

Introduction to three-dimensional rigid body motion — only need to highlight the distinction from two-dimensional motion in terms of (a) Angular velocity vector, and its rate of change and (b)Moment of inertia tensor; Three-dimensional motion of a rigid body wherein all points move in a coplanar manner: e.g. Rod executing conical motion with center of mass fixed — only need to show that this motion looks two-dimensional but is three-dimensional, and two-dimensional formulation fails.

Reference books:

1. Engineering Mechanics, 2nd ed. — MK Harbola
2. Introduction to Mechanics — MK Verma
3. An Introduction to Mechanics — D Kleppner & R Kolenkow
4. Principles of Mechanics — JL Synge & BA Griffiths
5. Mechanics — JP Den Hartog
6. Engineering Mechanics - Dynamics, 7th ed. - JL Meriam
7. Mechanical Vibrations — JP Den Hartog
8. Theory of Vibrations with Applications — WT Thomson

BSC-101C
L T P
3 1 -

Quantum Mechanics for Engineers

Total Credits: 4

External Marks: 80
Internal Marks: 20

Total Marks: 100

Prerequisite: Mathematics course on differential equations and linear algebra

Unit 1: Wave nature of particles and the Schrodinger equation
Introduction to Quantum mechanics, Wave nature of Particles, Time-dependent and time-independent Schrodinger equation for wavefunction, Born interpretation, probability current, Expectation values, Free-particle wavefunction and wave-packets, Uncertainty principle, Mathematical Preliminaries for quantum mechanics : Complex numbers, Linear vector spaces, inner product, operators, eigenvalue problems, Hermitian operators, Hermite polynomials, Legendre's equation, spherical harmonics.

Unit 2: Applying the Schrodinger equation
Solution of stationary-state Schrodinger equation for one dimensional problems– particle in a box, particle in attractive delta-function potential, square-well potential, linear harmonic oscillator.
Numerical solution of stationary-state Schrodinger equation for one dimensional problems for different potentials
Scattering from a potential barrier and tunneling; related examples like alpha-decay, field-ionization and scanning tunneling microscope
Three-dimensional problems: particle in three dimensional box and related examples, Angular momentum operator, Rigid Rotor, Hydrogen atom ground-state, orbitals, interaction with magnetic field, spin
Numerical solution stationary-state radial Schrodinger equation for spherically symmetric potentials

Unit 3: Introduction to molecular bonding
Particle in double delta-function potential, Molecules (hydrogen molecule, valence bond and molecular orbitals picture), singlet/triplet states, chemical bonding, hybridization

Unit 4: Introduction to solids
Free electron theory of metals, Fermi level, density of states, Application to white dwarfs and neutron stars, Bloch's theorem for particles in a periodic potential, Kronig-Penney model and origin of energy bands
Numerical solution for energy in one-dimensional periodic lattice by mixing plane waves.

Text book: Eisberg and Resnick, Introduction to Quantum Physics

Reference Books:

1. D. J. Griffiths, Quantum mechanics Richard
   Robinett, Quantum

2. Mechanics Daniel Mc Quarrie, Quantum
   Chemistry

BSC-101D
L T P
3 1 -

Oscillations, waves and optics

Total Credits: 4

External Marks: 80
Internal Marks: 20

Total Marks: 100

Prerequisites:

i.   Mathematics course on Differential equations
ii.   Introduction to Electromagnetic theory

Unit 1: Simple harmonic motion, damped and forced simple harmonic oscillator: Mechanical and electrical simple harmonic oscillators, complex number notation and phasor representation of simple harmonic motion, damped harmonic oscillator – heavy, critical and light damping, energy decay in a damped harmonic oscillator, quality factor, forced mechanical and electrical oscillators, electrical and mechanical impedance, steady state motion of forced damped harmonic oscillator, power absorbed by oscillator

Unit 2: Non-dispersive transverse and longitudinal waves in one dimension and introduction to dispersion: Transverse wave on a string, the wave equation on a string, Harmonic waves, reflection and transmission of waves at a boundary, impedance matching, standing waves and their eigenfrequencies, longitudinal waves and the wave equation for them, acoustics waves and speed of sound, standing sound waves.

Waves with dispersion, water waves, superposition of waves and Fourier method, wave groups and group velocity.

Unit 3: The propagation of light and geometric optics

Fermat's principle of stationary time and its applications e.g. in explaining mirage effect, laws of reflection and refraction, Light as an electromagnetic wave and Fresnel equations, reflectance and transmittance, Brewster's angle, total internal reflection, and evanescent wave.

Mirrors and lenses and optical instruments based on them, transfer formula and the matrix method

Unit 4: Wave optics

Huygens' principle, superposition of waves and interference of light by wavefront splitting and amplitude splitting; Young's double slit experiment, Newton's rings, Michelson interferometer, Mach-Zehnder interferometer.

Farunhofer diffraction from a single slit and a circular aperture, the Rayleigh criterion for limit of resolution and its application to vision; Diffraction gratings and their resolving power;

Lasers:Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: gas lasers (He-Ne, CO_2), solid-state lasers(ruby, Neodymium), dye lasers; Properties of laser beams: mono-chromaticity, coherence, directionality and brightness, laser speckles, applications of lasers in science, engineering and medicine.

Reference books:

1. Ian G. Main, Oscillations and waves in physics
2. H.J. Pain, The physics of vibrations and waves
3. E. Hecht, Optics
4. Ghatak, Optics
5. O. Svelto, Principles of Lasers

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BSC-101E

L T P
3 1 -

Semiconductor Optoelectronics

External Marks: 80
Internal Marks: 20

Total Credits: 4

Total Marks: 100

Prerequisite: Semiconductor physics

Unit 1: Review of semiconductor physics

Fermi level and quasi-Fermi level (variation by carrier concentration and temperature); p-n junction, Metal-semiconductor junction (Ohmic and Schottky); Carrier transport, generation, and recombination; Semiconductor materials of interest for optoelectronic devices, bandgap modification, heterostructures; Light-semiconductor interaction: Rates of optical transitions, joint density of states, condition for optical amplification.

Unit 2: Semiconductor light emitting diodes (LEDs)

Rate equations for carrier density, Radiative and non-radiative recombination mechanisms in semiconductors, LED: device structure, materials, characteristics, and figures of merit.

Unit 3: Semiconductor lasers

Review of laser physics; Rate equations for carrier- and photon-density, and their steady state solutions, Laser dynamics, Relaxation oscillations, Input-output characteristics of lasers. Semiconductor laser: structure, materials, device characteristics, and figures of merit; DFB, DBR, and vertical-cavity surface-emitting lasers (VECSEL), Tunable semiconductor lasers.

Unit 4: Photo detectors

Types of semiconductor photo detectors -p-n junction, PIN, and Avalanche --- and their structure, materials, working principle, and characteristics, Noise limits on performance; Solar cells. Low-dimensional optoelectronic devices: Quantum-well, -wire, and -dot based LEDs, lasers, and photo detectors.

References:

1. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc. (1995).
2. B. E. A. Saleh and M. C. Teich, Fundamentals of Photonics, John Wiley & Sons,
3. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008).
4. A. Yariv and P. Yeh, Photonics: Optical Electronics in Modern Communications, Oxford University Press, New York (2007).
5. P. Bhattacharya, Semiconductor Optoelectronic Devices, Prentice Hall of India (1997).
6. Online course: "Semiconductor Optoelectronics" by M R Shenoy on NPTEL
7. Online course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Gupta on NPTEL

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BSC-101F

L T P

3 1 -

Optics, Optical Fibre, Magnetism and Quantum Mechanics

Total Credits: 4

External Marks: 80

Internal Marks: 20

Total Marks: 100

Objectives:

Basic concepts of optics and its applications, electricity and magnetism, and quantum physics.

UNIT – I: Optics

Diffraction: Introduction to interference and example; concept of diffraction, Fraunhofer and Fresnel diffraction, Fraunhofer diffraction at single slit, double slit, and multiple slits; diffraction grating, characteristics of diffraction grating and its applications.

Polarisation: Introduction, polarization by reflection, polarization by double refraction, scattering of light, circular and elliptical polarisation, optical activity.

UNIT – II: Fibre Optics and Lasers

Fibre Optics: Introduction, optical fibre as a dielectric wave guide: total internal reflection, numerical aperture and various fibre parameters, losses associated with optical fibres, step and graded index fibres, application of optical fibres.

Lasers: Introduction to interaction of radiation with matter, principles and working of laser: population inversion, pumping, various modes, threshold population inversion, types of laser: solid state, semiconductor, gas; application of lasers.

UNIT – III: Electromagnetism and Magnetic Properties of Materials

Laws of electrostatics, electric current and the continuity equation, laws of magnetism. Ampere's Faraday's laws. Maxwell's equations. Polarisation, permeability and dielectric constant, polar and non-polar dielectrics, applications of dielectric. Magnetisation, permeability and susceptibility, classification of magnetic materials, ferromagnetism, magnetic domains and hysteresis, applications.

UNIT – IV: Quantum Mechanics

Introduction to quantum physics, black body radiation, explanation using the photon concept, photoelectric effect, Compton effect, de Broglie hypothesis, wave-particle duality, Born's interpretation of the wave function, verification of matter waves, uncertainty principle, Schrodinger wave equation, particle in 1-D box.

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Course outcomes

Students will be familiar with

·Bragg's Law and introduced to the principles of lasers, types of lasers and applications
·Various terms related to properties of materials such as, permeability, polarization, etc.
·Some of the basic laws related to quantum mechanics as well as magnetic and dielectric properties of materials
·Simple quantum mechanics calculations

References:

1. I. G. Main, "Vibrations and waves in physics", Cambridge University Press, 1993.

2. H. J. Pain, "The physics of vibrations and waves", Wiley, 2006.

3. E. Hecht, "Optics", Pearson Education, 2008.

4. A. Ghatak, "Optics", McGraw Hill Education, 2012.

5. O. Svelto, "Principles of Lasers", Springer Science & Business Media, 2010.

6. D. J. Griffiths, "Quantum mechanics", Pearson Education, 2014.

7. R. Robinett, "Quantum Mechanics", OUP Oxford, 2006.

8. D. McQuarrie, "Quantum Chemistry", University Science Books, 2007.

9. D. A. Neamen, "Semiconductor Physics andDevices",TimesMirrorHighEducation Group, Chicago, 1997.

10. E.S. Yang, "Microelectronic Devices", McGraw Hill, Singapore, 1988.

11. B.G. Streetman, "Solid State Electronic Devices", Prentice Hall of India, 1995.

ESC-FTL-201-A   **TEXTILE AND FIBRE SCIENCE**

L T P   **Total Credit: 3**
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Course Objectives:

This course aims at updating the knowledge of students in the following fields of textile and fibre science:

1. The basic concepts of fibre properties
2. To make the students understand about the natural fiber and their physical and chemical properties.
3. To make the students learn about difference between manmade fibre and natural fiber and their spinning processes.
4. Fundamental aspects of synthetic fiber and production of commodity fibers like PET, Nylon, PT and PAN.
5. Studies on various high performance fibers

Unit 1: Introduction to fibres, essential and desirable properties of textile fibres, classification of textile fibres, important fibre properties and their effect on influencing yarn and fabric properties, effect of fibre cross sectional structure upon lusture and other physical fibre properties.

Unit 2: Natural Vegetable fibres like cotton, linen etc., Bast fibres like Jute, Flex Hemp, Protein fibres such as wool, silk etc., application of these fibres in fashion and apparel Industry, important physical and chemical properties of these fibres.

Unit 3: Introduction and brief history of regenerated and man-made fibres, relative merits and demerits of manmade and natural fibres. Introductory concept of fibre spinning. Brief outline of the manufacturing processes of regenerated cellulosic fibres, physical and chemical properties of these fibres.

Unit 4: Introduction to nylon, polyester, acrylics, polypropylene and polyethylene, brief outline of the manufacturing processes of these fibres (only flow charts), chemical and physical properties of important man-made fibres. basic concept, properties and uses of high performance fibres such as Nomex, Kevlar, Carbon, Spandex.

Suggested Text Books & References:

1. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers, Delhi, 1983.

2. Cook Gordon J, "Hand Book of textile fibre", Vol. I and II, Woodhead Fibre Science Series, UK, 1984.

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3. Gupta V B and Kothari V K, "Manufactured Fibre Technology", 1st Ed., Chapman and Hall, London, 1997.

4. Kothari V K Ed. "Textile Fibers: Developments and Innovations, IAFL Publications, New Delhi, 2000.

Course Outcomes:

After completing the course successfully, the student should be able to:

1. have the knowledge of essential and desirable properties of textile fibre and their effect on influencing yarn and fabric properties
2. acquire knowledge of natural fibers.
3. know different varieties of Natural, Regenerated and Synthetic fibres used in textile industries.
4. know structures of different textile fibres.
5. know manufacturing process of different Man-Made fibres.
6. identify different fibres on the basis of their physical and chemical properties.

Note:
1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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ESC-FTL-203-A

L T P

3 0 0

YARN FORMATION TECHNOLOGY

Total Credit: 3

Course Objectives:

- To familiarize the students with objectives of initial stages of yarn formation viz. Ginning, Mixing and Blending, Blowroom and Card, Drawing-in, Combing, Roving & Ring frame
- To make the students understand about the unconventional methods of yarn formation viz..Rotor Spinning, Air-Jet spinning and Friction Spinning
- To make the students learn about fancy yarn, sewing thread and yarn numbering systems, etc.

Unit 1: Brief introduction of the subject: Introducing yarn, classification of yarns and their types, staple and filament yarns, Introduction to cotton spinning system, flow chart from fibre to spun yarn, Objectives of ginning, mixing and blending, introduction and objectives of blow room & carding

Unit 2: Objectives of combing, comparing carded and combed yarn, Objectives of draw frame, speed frame and ring frame, textured yarns, types and uses.

Unit 3: Woolen and worsted yarn, flow chart from fibre to spun yarn for woolen and worsted system, Introduction to other spinning system like rotor spinning, air jet and friction spinning etc., Properties, uses and comparison among ring spun, rotor spun and air-jet spun yarns

Unit 4: Yarn numbering system and calculations pertaining to conversion, Brief description of fancy yarns, essential properties of sewing threads, fibres used, thread finishes and thread sizes.

Suggested Text Books & References:

1. Comdex Fashion Design; Fashion Concepts: Vol –I by Dr. Navneet Kaur, dreamtech press, 2010
2. Salhotra K R, "Spinning of Man Made Fibres and Blends on Cotton Spinning System",The Textile Association, Mumbai, 1989
3. Sara J. Kadolph, "Textiles", Prentice Hall, 10th edition 2007
4. Bernard P. Corbman, "Textile Fibres to Fabric" McGrawhill Publications, 6th Edition 1983
5. Penny Walsh, " The yarn book", A & C black publisher
6. W Klein, "Short Staple Spinning Volume-I, II, III & IV
7. Eric Oxtoby, "Spun Yarn Technology"

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Course outcomes

At the end of the course, the students will:

- be able to understand the conventional and unconventional methods of yarn formation.
- be able to understand and differentiate between yarn, sewing thread, fancy yarn, woolen yarn and worsted yarn as well as their utilities.
- be able to learn about yarn specifications, thread sizes, calculate various parameters like blowroom cleaning efficiency, draft on drawframe as well as conversion factors of different yarn numbering systems.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-201A   **INTRODUCTION TO FASHION AND APPAREL INDUSTRY**

L T P   Total Credit: 3

3 0 0

Course Objective:

To acquaint the student with the fundamentals of fashion and basic principles that govern all fashion movement and change.

1. To learn basic fashion terminology, and to understand, principles, concepts and theories involved in course coverage.
2. To explore the manner in which economic, sociological and psychological factors influence fashion demand.
3. To know about the fashion center in world.
4 To understand about the fashion forecasting and services.

UNIT–1: Introduction to apparel industry, Indian apparel industry scenario and its SWOT analysis. Structure and working flowchart of various departments of a garment production house.

UNIT–2: Fashion terminology, fashion cycle, fad/classic, factors affecting fashion, Fashion adaptation theories, major fashion centers of the world: brief introduction to world fashion centers - American, European, Japanese.

UNIT–3: Consumer identification with fashion cycles- leaders, innovators, followers. Motives of consumer buying, fashion selection, brief introduction about roles/jobs in fashion / export houses.

UNIT – 4: Fashion information services, trend forecasting and auxiliary services. Forecasting trends: Purpose of forecasting trends, how to use forecasting service, fashion promotion and communications- Trade fairs, Fashion shows.

Suggested Text Books & References:

1. Brockman, H.L., "The theory of Fashion ", John Wiley & Sons, 1965.
2. Kawashima, Masazki, "Fundamentals of Men's Fashion Design ", Fairchilds publications, 1976.
3. Carr, H.C., "The clothing Factory ", The Clothing Institute, Blackwell London, 1972.
4. Jarnow, J.A., and Judelle B., "Inside the Fashion Business ", JWS, 2nd edition, 1974.
5. Barton, Roger, "Advertising Handbook ", Prentice Hall Inc, 1956.
6. Swinney, John B, "Merchandising of Fashion ", Ronald press, 1942.
7. Jacob Solinger., "Apparel Manufacturing Handbook ", VanNostrand Reinhold Company, 1980.

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Course Outcomes:

After completion of the course, students will be able to:

1. understand the concepts of Indian apparel industry and working of various department of apparel industry.
2. have the knowledge of fashion terminology, Fashion adaptation theories and fashion centers.
3. .understand about the fashion consumer identification and jobs in export house.
5. understand the concepts of fashion information services and forecasting.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-203-A   APPAREL PRODUCTION-I

L T P   Total Credit: 3

3 0 0

Course Objectives:

The course is designed for the students to learn:

- basic concepts of apparel production and present scenario.
- types of cutting, spreading devices and their functions.
- types of fabrics, marker planning and making.
- types of pattern and pattern lay out etc.

UNIT 1: Operation of apparel manufacturing unit, its various departments and their functionality. The planning, drawing, reproduction of the marker, requirement of marker planning, marker plan efficiency, methods of marker planning and use.

UNIT 2: Cutting: Objectives and methods of cutting.
Understanding of various fabrics, its effect on spreading and cutting techniques in relation to quality. The spreading of fabric to form a lay, requirement of spreading and different spreading method. Problems caused by improper cutting and spreading methods.

UNIT 3: Tracing and marking terminology- chalked marking, chalked thread, colour coding, pin marking, tailors tacks, thread tracing.
Types of pattern– Commercial pattern, Drafted pattern, Draped pattern, Graded pattern, Production pattern, Trade back pattern.

UNIT 4: Aids and tool equipment for cutting- band knife, clamp, click press, electrical cloth notcher, Straight knife cutter, Circular knife, portable rotary knife cutter, Cutting board, Cutting table, Drill, Pattern perforator, razor blade, scissors, shears, face to face spreader, manual spreader, one way spreader, Tubular knit spreader.

Suggested Text Books & References:

1. Tyler, "Carr and Latham's Technology of Clothing Manufacturing" Blackwell, Scientific Publications, 1988.
2. Ann Gioello, "Fashion product terms", Fairchild, 2nd Edition.
3. Jacob solinger ,"Apparel manufacturing handbook" Wiley, John & Sons, 1980
4. Jones, Richard M., "Apparel Industry", Blackwell, 2nd Edition .

Course Outcomes:

After completion of the course, students will have the knowledge of:

- different types of cutting devices and their working principles

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- spreading mechanism and working of different spreading devices.
- marker planning, marker making, patterns and pattern lay outs

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-205A   ELEMENTS OF FASHION AND DESIGN

L T P

3 0 0   Total Credit: 3

Course Objectives:

The course is designed to make the students aware of:

- basic elements and principles of garment design and their applications.
- Concepts of aesthetics and their role in fashion Design.

UNIT 1: Design- definition, requirements of a good design, Types- natural and decorative, types of decorative design. Design development –types of motifs. Mood board- types and formation of mood board. Collage and its types – relief and flat. Basics of elements and principles of design.

UNIT 2: Elements of design: Lines – horizontal, vertical, zigzag, diagonal and curve.Color – color wheel; primary, secondary and warm, cool, tertiary value: tints, shades and Influences of clothing by color. Textures- Different types of textures, identification and suitability of textures for different garments. Shape – Geometrical – Realistic – Stylized – Abstract. Different types of Silhouettes.Dots and types of dots as polka dot, etc and their application in designing. Introduction to principles of design- balance- proportion- emphasis, rhythm- harmony with their suitable example.

UNIT 3: Elements and principles of design-its perspective and application to apparel and lifestyle products. Understanding the concepts of aesthetics .Introducing principles of design on apparels: figure/ design analysis: stout figure, tall and thin figure, tall and fat, short and thin, short and fat, slender figure, narrow shoulders, broad shoulders, round shoulders, big bust, small chest, large hip, large abdomen, round face, long face, square face, diamond face, oval face and broad face, narrow hips, broad hips, heavy thighs, short legs, large legs etc .

Characteristics of a well dressed person- selection of fabrics, textiles, pattern and colour, aesthetic requirement for dress

UNIT 4: Elements of apparels, women's dress–style, fashion and fad- suitability to the individual factors in personality. Men's dress- factors to consider, fabrics, coats, trousers, shirts, collars & pockets. Accessory of design neck ties, hats, over coats, hosiery & shoes, hair dressing.

Suggested Text Books & References:

1. Anderson and Anderson," Costume design", Harcourt Brace 2nd Ed, 1999.
2. Laver J, "Costume and Fashion", Thames & Hudson, 1995.
3. Lee Sharon, "Inside Fashion Design", Tate, 1977.
4. Sumathi G. J., "Elements of Fashion and Apparel Design", New Age International Publisher, 2002.
5. Brockman, H.L," The theory of Fashion", John Wiley & Sons,1965.

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6. Kawashima, Masazki, "Fundamentals of Men's Fashion Design", Fairchilds Pub, 1976.

Course Outcomes:

After completion of the course, students will be able to:

1 understand the basic concepts of design and Mood Boards.
2 concepts of elements of design and principles of design on apparels: figure/ design analysis.
3 understand the concepts of different Men dress style and Women dress style.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3 Electronic gadgets including cellular phones are not allowed in the examination.
4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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BSC-MAL– 201A   APPLIED STATISTICS FOR FASHION AND APPAREL

L T P   Total Credit: 3

3 0 0

Objectives: The objective of this course is to introduce Random distribution, Probability models, Mathematical Expectation, Binomial Poisson, Geometric as discrete distribution, Normal, uniform and exponential as continuous distributions, Sampling theory.An attempt has been made in this course to strike a balance between the different concepts of mathematical statistics.

Unit-I: Introduction to Measures of Central Tendency and Dispersion: Mean, Median, Mode, Range, Variance, Standard deviation, Co-efficient of variation, moments, skewness and kurtosis. (Application Part only)

Unit-II: Introduction to theory of Probability: Additive and Multiplicative Laws of probability. Random Variables, Mathematical Expectation with Properties. (Application Part only)

Unit-III: Discrete Distributions: Uniform, Binominal, Poisson and geometric (Only Properties and applications not their proofs).**Continuous Distributions:** Uniform, Exponential and Normal Distributions (Only Properties and applications not their proofs)

Unit-IV: Sampling Theory: Population and sample, Types of Sampling, Sampling Distributions of means and proportion, Introduction to Tests of hypothesis and significance, Statistical hypothesis, Null hypothesis, Type II errors and I, Levels of significance, Tests of significance for Large samples.

Suggested Text Books & References:

1. Spiegel M. R.,"Theory and problems of Probability,Statistics". (Schaum's Outline Series) - McGraw Hill Book Co.
2. Gupta S C and Kapur V K, Fundamentals of Mathematical Statistics - Sultan Chand & Sons.
3. Grewal B S, Higher Engineering Mathematics, 40th Edition, Khanna Publisher
4. Robert E Stine and Dean Foster, Statistics for Business- Decision making and analysis, Pearson.

Course outcome: After successful completion of this course the students will able to understand the fundamentals of the theory of probability and its applications in stochastic process and various distributions.

Note:

1   Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2   The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3   Electronic gadgets including cellular phones are not allowed in the examination.

4   There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

BSC-233   **CONSTITUTION OF INDIA**

L T P   **Total credit : Non Credit**
3 0 0

Internal Assesment Marks:10+External Marks of Theory Exam:40 = Total Marks: 50

Course Objective: The objective of this course is to understand basic features of the Indian Constitutional Law.

Unit-1: Constitution: Definition and Classifications, its sources, Constitutional Conventions, Constitutional Law, Rule of Law, Federalism and its classifications, Separation of Powers, Citizenship, Fundamental Rights and Directive Principles of State Policy

Unit-II: Constitutional Organs: Parliament, Executive and Judiciary, their inter-se relations

Unit-III: Centre-State Relations: Legislative, Financial and Administrative

Unit-IV: Breakdown of Constitutional Machinery in a State, Emergency Provisions, Amendment of Constitution, Doctrine of Basic Structure

Suggested Text Books & References:

1. V.N. Shukla, Constitution of India
2. M.P. Jain, Indian Constitutional law
3. D.D. Basu, Constitutional Law of India

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. The external theory examination shall carry forty marks only.
5. There will be nine questions in total from all four units. The question paper shall consists of two parts namely Part-A and B. Part-A shall be mandatory of 8 marks which shall carry short answered questions equally distributed from each unit. Part-B shall consists of four units and each unit shall carry two long answered questions of eight marks each and a candidate shall answer four questions selecting one question from each unit.

ESC-FTP-211A   FIBRE IDENTIFICATION & YARN FORMATION LAB

L T P   Total Credit: 1.0

0 0 2

Course Objectives:

- To illustrate various fibres on microscope and familiarize students with various techniques of fibre identifications.
- This Lab course is also designed to impart practical demonstration of various yarn formation machineries as a bridge between theory and practice.

Part – I: Fiber Identification:

- Identification of various natural, regenerated and manmade fibres such as cotton, wool, silk, viscose, cellulose triacetate, nylon 6, polyester, acrylic, etc. by physical and chemical methods.
- Principle of microscopy and their application in fibre identification. Blend identification by physical and chemical methods.
- Qualitative and quantitative determination of components in blends.

Part-II : Yarn Formation

- Discussion and Demonstration of various machines and of manufacturing processes involved in converting fibers to yarns Ring Spinning and Rotor spinning.
- Line sketches of conventional spinning.
- Visual identification of spun, filament, cords, cable and fancy yarns and sewing threads.
- Collection of yarn samples; fancy yarns, sewing threads etc. and find out their characteristics in terms of fibre type, yarn type, size and physical appearance.
- Assignments on new developments in yarn.

Suggested Text Books & References:

1. "Identification of Textile Materials", Textile Institute, Manchester.
2. Gohl EPG, "Textile Science: An explanation of fibre properties", CBS Publishers, Delhi,
3. Heny A.N.J," Fiber Microscopy", A hand book of laboratory manual.
4. Meredith R & Hearle J.W.S.," Physical Methods of Investigating Textiles".
5. David M. Hall," Practical Fiber Identification", Auburn Al, 1976
6. Cook Gordon J, "Hand Book of textile fibre", Vol. I and II, Woodhead Fibre Science Series, UK, 1984.
7. Sara J. Kadolph, "Textiles", Prentice Hall, 10th edition 2007
8. Bernard P. Corbman, "Textile Fibres to Fabric" McGrawhill Publications, 6th Edition 1983

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Course Outcomes:

At the end of this course the students will be able to:

- identify various natural and manmade fibres by physical and chemical methods
- quantitatively determine the blend component
- understand the blowroom line, mixing, blending and sequence of machines in the blowroom line;
- understand carding, draw frame, combing, speed frame, ring frame for processing different materials;

Note:

1. At least ten experiments have to be performed in the semester; out of which at least seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set as per the scope of syllabus.
2. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
3. The students will be allowed to use non-programmable scientific calculator. However. sharing/exchange of calculator is prohibited in the examination.
4. Electronic gadgets including cellular phones are not allowed in the examination.

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PCC-FTP-213A   FASHION SKETCHING AND ILLUSTRATION LAB

L T P   Total Credit: 1.0

0 0 2

Course Objectives:

1. To acquire the skills to use different mediums – Pencil, Water color, Poster color.
2. To understand the texture of fabric and render it
3. To analyze variety of pictures and sketch and render them accordingly
4. To understand terminology and be able to identify basic body types.
5. Students will be able to determine clothing silhouettes, fabric selection, and design elements appropriate for specific body types.
6. They will learn how to sketch a fashion figure in different poses and how to personalize it according to their own style.

Fashion Sketching

- Usage of different dry and wet colour mediums in sketching e.g. shading, filling etc. Normal figure proportions, grid theory for formation of fashion figure.
- Fashion Figure proportions, Fashion figure in different views, as front view, 3/4th view, back view, side view.
- Flashing of the fashion figure in different views. Movement figures-principles to form a movement figure, sketching of the movement figures in various postures/body positions. Variations of body parts-Arms, Hands, legs, Feet. Facial figure proportions- features, hairstyles.
- Developing silhouettes–draping, fold lines, prints, etc. Photo analysis, fabric rendering, simple illustration on fashion figures.
- Designing and sketching of the following fashion essentials: types of necklines, type of sleeves, type of collars, type of pockets, type of yokes, types of skirts, type of waistlines, type of pleats, tucks, types of plackets, etc.
- Designing of various garments from the following categories: Children wear, Ladies' wear, Men's wear, Nightwear, Apron, etc.
- Practice on editing of Fashion Illustration work on computer.

Suggested Text Books & References:

1. MaiteLafuente ,"Fashion Illustration techniques", Om Publication.
2. Fernandez, "Illustration for Fashion Design 12 Steps to the Fashion Figure", Pearson.
3. Perpard, Prakashan, B Abling, "Antomy And Drawing", Fairchild.
4. Ireland, "Fashion Design Drawing and Presentation", Batsford.
5. Anne allen, "Fashion Drawing: the basic principle", Om Publication.
6. Mckelvey, Fashion Design, Blackwell
7. Irland, Fashion Design Illustration: Children, Batsford
8. Irland, Fashion Design & Drawing & Presentation, Batsford

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Course Outcomes:

On completion of this module the student should be able to:

1. understand various types of medium and develop her own rendering style.
2. analyse fabric texture and render them suitable medium.
3. analysis of figure salute, fabric, texture and feel and render them
4. develop skill in figure drawing and develop her own illustration style.

Note:

1 At least ten experiments have to be performed in the semester; out of which at least seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set as per the scope of syllabus.
2 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
3 Electronic gadgets including cellular phones are not allowed in the examination.

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PCC-FTP-215A   **ELEMENTARY GARMENT MANUFACTURING LAB**

L T P   Total Credit: 1

0 0 2

Course Objectives:

- This lab course is designed to impart hands on experience of the recognition of different aids. tools and equipment for cutting, sewing techniques, practice of using sewing needles, sewing threads and embroidery threads. This skill will help the students for production and planning of garments as well as utility of trims and accessories.

List of Experiments:

- Introduction and application of different aids, tools & equipment for cutting.
- Selection procedure of different types of sewing thread & embroidery thread.
- Utility of different aids & tools for garment construction.
- Introduction to the tools and material used for drafting.
- Drafting of child's basic and adults body blocks.
- Introduction to sewing machine, their parts and accessories.
- Practice of machine stitches on paper and on fabric. Straight line, Square. Triangle. Curves, S – Curve, Rectangle with curve, Circles, Half circle etc.
- Basic hand stitches.
- Preparation of different types of seams.
- Designing & construction of different types of necklines and their finishing with piping or shaped facings.
- Sampling of different types of plackets (Patch, Welt, Bound, Inseam, Bello etc).
- Sampling of different types of pleats, darts, gathers & tucks.
- Practice of attachment of zipper (concealed, open ended, lapped, centered)

Suggested Text Books & References:

1. Carr, H.C., "The clothing Factory ", The Clothing Institute, London, 1972.
2. Jacob Solinger., "Apparel Manufacturing Handbook ", VanNostrand Reinhold Company, 1980.
3. Irland, Encyclopedia of Fashion Details, Batsford

Course Outcomes:

After completion of the course, students will be able to:

- recognise different types of tools, aids and equipment
- prepare different patterns and practice of pattern lay outs
- develop practical skills relevant to garment construction, etc.

Note:

1 At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may

either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

2. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

3. Electronic gadgets including cellular phones are not allowed in the examination.

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BSC-FTL-202A **COLOUR PHYSICS**

L T P   **Total Credit: 3**

3 0 0

Course Objectives:

The objective of the course is to make the students familiar with topics of Colour Physics like concepts and specifications of colours, colour contrast, colour intensity charts, colour theories. psychology effects of colour, warm colours, etc.

UNIT-1: Concept and specifications of colour, Light and colour phenomenon, perception of colour, the theory of colour vision, Additive and Subtractive combinations, Colour theories as light theory, pigment/ Brewster colour theory. Colour wheel– primary, secondary, sub-secondary and tertiary colours. Colour combination techniques in fabric and garments. Attributes of the primary and secondary colours. Warm and Cool colours.

UNIT-2: Colour harmony, colour contrast in fabric and garments. Application of colour combination and harmony in designing of clothing/fabric. Modification of colours as formation of tint, shades &coloured grays etc. Colour intensity charts. Principle of colour measurement: Munsell system: hue, chroma, value, standard observer, tristimulus value, and CIE lab colour system. Metamerism. Outline for the movement of colours in fashion with the factors affecting the choice of colour.

UNIT-3: Concept of colour and brief idea about the relation between colour and chemical constitution. factors governing transmission, Beer's law, Lambert's law, absorption, scattering of light, concept and definition of source, illuminant, detector, description of colour, colour co-ordinates, colour rendition, colour adaptation.

UNIT-4: Colour and colour difference measurement, Kubelka Munk's equation, methods of colour estimation, -manual, their limitations, - instrumental, pass-fail criteria, concept of colour temperature, metamerism, standard illumination, absorption and reflectance spectra of a coloured material, measurement whiteness, evaluation of optical whitening, brief idea of computer colour matching and formulation.

Suggested Text Books & References:

- Colour Physics for Industry by R. McDonald.
- instrumental Colour Measurement and Computer Aided Colour Matching for Textiles by H.S. Shah and R.S. Gandhi.
- Principles of Colour Technology, F.W. Billmeyer, 3. Dyeing and Chemical Technology of Textile Fibres by E.R. Trotman.

- Modern Concepts of Color and Appearance Paperback by Asim Kumar Roy Choudhury (Author), Gary N. Mock .
- Fundamentals and Practices in Colouration of Textiles, 2nd Edition, J. N. Chakraborty.

Course Outcome:

After completing the course, the students should be able to:

- know various terminology and theories of colours.
- understand colour combination techniques and colour contrast in fabric and garments
- understand the relation between colour and chemical constitution, Measurement of colour difference, colour estimation etc.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-202A   TEXTILE FABRIC

L T P   Total Credit: 3
3 0 0

Course Objectives:

The course is designed to make students learn:

- the basic concepts of fabric manufacturing technology
- about handloom, powerloom and shuttleless loom technology
- fabric properties: aesthetic, functional and comfort
- about fabric defects, classification, fabric inspection etc.

UNIT-1

Classification of fabrics, introduction to various fabric manufacturing methods, conversion of yarn into fabric with flow charts, Introduction of warp and weft preparatory processes. Winding: Objectives, types of packages, Flow of material on a winding machine, Brief idea about different devices in a winding machine. Warping: Objectives of warping, Direct and sectional warping

UNIT–2

Sizing: Objectives of sizing. Various sizing ingredients. Drawing-In: Objectives and flow of material in these operations.

Shuttle Looms: Definition of handloom, plain loom, and automatic loom. , General passage of material through loom, description of important parts of a loom, basic loom mechanisms: primary, secondary and auxiliary motions.

UNIT–3:
Brief introduction and overview to Shuttleless looms. Their advantages over shuttle looms. Terms used for all woven fabrics, Ways to Distinguish Warp & Filling Yarns, Fabric properties-dimensional/structural, mechanical properties related to performance and durability, aesthetic properties. Functional and comfort related fabric properties

Unit 4:
Fabric defects; classification, reasons, point rate system for cloth grading, drawbacks of point system, fabric inspection. Introduction about followings; Knitted fabrics, narrow fabrics, some standard fabrics, introduction to non woven fabrics, Fabrics from yarns; braids, nets, laces, Composite Fabrics; coated fabrics, laminated fabrics, bonded fabrics and tufted fabrics.

Suggested Text Books & References:

1. Kaur Navneet, Comdex Fashion Design; Fashion Concepts: Vol –I, Dreamtech press, 2010
2. Gokarneshan N., Fabric structure and design, New Age Publishers
3. Adanur Sabit, Handbook of weaving; Technomic Publishing Company, Inc, U.S.A
4. Lord P.R.& Mohamed M.H., Weaving: Conversion of Yarn to Fabric, Watford : Merrow.
5. Marks & Robinson, "Principles of Weaving"

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6. NCUTE's Manual

Course Outcomes:

After completion of the course, students will:

- have the knowledge of essential requirements for fabric forming processes
- be familiar with different techniques of fabric production systems
- have the knowledge of raw materials used, size ingredients for producing woven fabrics;
- be familiar with the fabric inspection system, fabric defects and other types of fabrics.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-204-A   DESIGN CONCEPTS IN FASHION AND APPAREL

L T P

3 0 0

Total Credit: 3

Course Objectives:

- To familiarize the students about the design concepts and composition of design.
- To acquaint student about symmetry and Asymmetry of designs, patterns, border designs and their application in apparel construction.
- To impart knowledge of fabric designing by understanding the concepts of fabric structure comprising basic weaves, their modification as well as decorative weaves.

Unit 1: Woven design fundamentals; Classification of woven structures, Importance of fabric structure. Concept of fabric designing through fabric structure, methods of weave representation. Basic elements of a woven design; Design, Drafting plan, Peg plan and Denting, Types of draft plans.

UNIT 2: Plain weaves, Twill weaves, Sateen and Satin weave:External characteristics. properties, uses, ornamentation, regular and irregular sateen. Derivatives; warp rib, weft rib, hopsack, their classification, design, draft and peg-plan for all. Factors influencing prominence of twill weaves, influence of twist, classification; balanced and unbalanced: zig-zag, herringbone, curved, broken, transposed, elongated and combination twills.

UNIT3. Arrangement of figures· unit repeating design, the drop device (with reference to half drop, diamond base, ogee base, rectangular base lines), drops reverse designs, sateen system of distribution. Reversing inclined figures. Composition of designs–by Geometric ornamentation by the conventional treatment of natural and artificial forms.

UNIT 4: Construction of designs from incomplete repeat .General idea about weaves and colour effect. Border designing - Study of pattern–historical precedents. , border patterns, all over patterns.Construction of asymmetrical and symmetrical figures. Motif and its classification.

Suggested text books & References:

1. Groscicki Z J, "Watsons Textile Design and Colour", NewnesButtersworth, 1988.
2. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers, Delhi, 1983.
3. Davis, Marian L., Visual Design in Dress, Prentice-Hall Inc., 1996.
4. Elizabeth Rouse, Understanding Fashion, BSP Professional Books, 1989.
5. Harold Carr and John Pomeroy, Fashion Design and Product Development. Blackwell Scientific Publications, 1992.

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6. Howell, G., In Vogue, Conde Nast Books, 1991.

7. Penny Storm, Functions of Dress - Tool of Culture and The Individual, Prentice Hall, 1987.

8.B.,Anderson and Anderson 1999,costumes design, Harcourt brace 2nd Ed. Laver J,1995,Costu,mesv and fashion ,Thames and Hudson.

9.Lee Sharon,1997,inside fashion design,bytate.g.j,sumathi,elements of fashion and apparel design.

10Brockman,H.L 1965,The theory of Fashion ,John Wiley and Sons. Kwashima, Masazki,1976,Fundamentals of Mens fashion design,Fairchilds Pub.

Course Outcomes: After completion of the course, students should be able to:
- Understand the Basic concepts of weave design, Draft and Peg Plan
- Arrangement of figures and motifs in various methods
- Understand the Geometrical ornamentation and composition of designs,
- Placement of Patterns in symmetry and asymmetry way;
- Creation of Border designing.
- Recognise different types of weave designs
- Identify and understand the role of Elements and Principles design in costumes designing.

Note:
1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

checked Ritika Sharma 20/01/2020

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PCC-FTL-206A   TRADITIONAL INDIAN EMBROIDERIES AND TEXTILES

L T P   Total Credit: 3

3 0 0

Course Objectives:

The course is designed to make the students understand the:

- Concepts of Traditional Indian textiles and motifs/designs involved in producing such fabrics
- Types of embroidery stitches, techniques and machines used in textile surface ornamentations
- Various Indian traditional textiles and embroideries of different states with special reference to raw materials, embroidery threads, colors, stitch types, motifs and production processes
- Traditional textiles and embroideries of the Western and Asian countries

UNIT- 1: Surface ornamentation by beads, patchwork, embroidery, etc. Introduction to embroidery. Various types of embroidery stitches such as stem stitch, chain stitch, herringbone stitch, cross stitch, etc.

UNIT- 2: Study of Indian traditional textiles and embroideries of different States with special reference to material, thread, colors, stitches, motifs and production processes used such as Chikankari and Brocades of UP. Phulkari,ChambaRumal, Kasuti, Kanthas, Kasida, Sindhi, Kutch and Kathiawar

UNIT- 3: Introduction to the subject; Study of Indian traditional textiles such as woven textiles: Baluchar, Jamdani, Brocades, Ikat, Patola; Resist dyed textiles as Bandhani; Painted textiles as Kalamkari, Madhubani and Warli textiles; Printed textiles as block printed, bagroo and dabu.

UNIT- 4: Study of traditional textiles and embroideries of the western and asian countries as European textiles, Ikat textiles of Indonesia and Malaysia, Chinese textiles, American textiles and Japanese textiles. Advancements in embroidery techniques, embroidery machines with advanced features.

Suggested Text Books & References:

1. Usha Shrikant, "Ethnic Embroidery of India", Honesty Publications.
2. Behra B. K., "Traditional Textile Designs of India".
3. Barnden Betty, "Embroidery Basics", Barson's Educational Series Incorp.
4. Gillow, Traditional india Textile, Thames & Hudson, 1998
5. Readers Digest, Complete Guide to Needle work
6. Sophia Cauteild and Blanche, " The Dictionary of Needle work".

Course Outcomes:

After completion of the course, students will be able to:

- understand the fundamentals of Indian traditional textiles
- understand the embroidery techniques, stitches, machine and production processes of traditional Indian textiles and embroideries
- comprehend the various Indian traditional textiles of different states
- understands the traditional textiles and embroideries of Asian and Western countries

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-208A   **APPAREL PRODUCTION II**

Total Credit: 3

L T P

3 0 0

Course Objectives:

The course is designed to make the students understand about:

- basic concepts of post cutting operations, stitch forming mechanisms
- different types of sewing needles, sewing threads
- different types of seams and stitches

UNIT I: An overview of post cutting room operations – ticketing, bundling, material handling from cutting room to sewing room. General introduction of sewing room operations. An overview of history, evolution and modernization in sewing machineries. Description of components & functions of SNLS Sewing machine, Stitch formation mechanism, Drop feed mechanism of SNLS. Relative merits & demerits of SNLS machine and associated feed mechanism. Factors affecting sewing performance, selection criteria for sewing machine needle & sewing threads. Needles – Types of needles for Textile and Non textile materials. Hand and Sewing machine needles. Metallurgy and Shapes of Needles, Needle cutting Index, Mechanical damage to fabric by needle heating & remedial measures.

UNIT II: Sewing Threads – Influence of sewing thread selection & properties on seam performance & garment serviceability. Fibre types, twist direction & plying, thread composition & construction – staple, continuous, core-spun, air- entangled, texturised. Thread packages - classification based on thread constructions, machine types & end usages Metric & cotton ticket numbering system, sewing thread cost evaluation. Sewing Problems- Problems related to stitch formation- missed stitches, skipped stitches, and variable stitch density. Damage to fabric along the stitch line, Seam pucker due to sewing thread, fabric properties, inaccurate pattern cutting.

UNIT III: Seam Classifications- Notations, distinguishing factors and applications. Terminologies – Seam Allowance, Seam Let out, Extended Seam Allowances, Exposed and enclosed seams, Inside and Outside Curved Seams, Stitched and Fused Seams, Stitched and Glued Seams. Seam Finishes – Definition and Requirement, Types of Seam Finishes – Book Seam Finish, Net Bound Seam Finish, Single ply bound seam finish, Double stitched seam finish, Glued seam finish, pinked seam finish.

UNIT IV: Stitch types & classifications- designation, appearance & application areas. Distinction between hand & machine stitches – appearance, method of construction & end usage. Overview of different hand stitches like -- Back stitch, Half back stitch, Modified back stitch, Blanket stitch, Blind stitch, Button hole stitch. Overview of different machine stitches like Machine stitches - Lettuce edging, Zigzag stitch, Over edge stitch, Purl edging, Picot edging, Safety Stitch, Scallop over edge, Shirring stitch, Elasticised shirring.

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Suggested Text Books & References:

1. Jacob solinger ,"Apparel manufacturing handbook", VanNostrand Reinhold Company. 1980

2. Tyler, "Carr and Latham's Technology of Clothing Manufacturing" Blackwell.
3. Jones, Richard M., "Apparel Industry", Blackwell, 2nd Edition .
4. Chuter, Introduction to Clothing Production Management, Blackwell

Course Outcomes:

After completion of the course, students will:

- have the knowledge of sewing machines, sewing needles and sewing threads
- be able to identify seams and stitches and their appearance, applications and properties.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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Department of Fashion Technology
Bhagat Phool Singh Mehila Vishwavidyalaya
Khanpur Kalan (Sonepat) Haryana-131305

HSMC-FTL-202A   MERCHANDISING AND MANAGEMENT FUNCTION

L T P   Total Credit: 3
3 0 0

Course Objectives:

- To know about the marketing management, process, marketing concepts.
- To know about merchandiser and its role in industry.
- To know about STP process and product development process.

UNIT 1: Marketing- Definition, what it does, core concepts of marketing, marketing management –process, marketing concepts- different approaches. Perceptions of marketing. Marketing mix- P's of Marketing'

Unit 2: Merchandising-definition, role of a merchandiser- differentiating his roles at buyer, buying office and manufacturers workplace, cost merchandising-costing, different departments in an export house and their functioning. Fashion Marketing-fashion marketers, what differentiates fashion marketing, factors affecting fashion marketing.

Unit 3: STP process, Steps in STP, levels of market segmentation, advantages of segmentation, requirements of effective segmentation, basis of segmentation, market targeting-evaluating the segments, choosing a positioning strategy.

Unit 4: Product Development-Product, product line, product development, need for product development, types of product development, steps of product development, product life cycle, product development in apparel industry-need, organisations involved in PD-buyer, buying office, manufacturer- people involved.

Suggested Text Books & References:

1. John Graham, Mary C. Gilly, Philip R. Cateora, International Marketing, Mc Graw Hill, 2008.
2. Frings," Fashion from Concept to Consumer 7th Edition", Pearson.
3. Mike Easey,"Fashion marketing", Om Publication.

Course Outcomes:

After completion of the course, students will be able to learn:
- marketing and management functions in fashion sector
- the knowledge about product development and product life cycle.

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Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

MC-233   ENVIRONMENTAL SCIENCE

L T P   Total Credit: Non Credit
3 0 0

Internal Assesment Marks:10+External Marks of Theory Exam:40 = Total Marks: 50
Course Objectives:

Unit I : The Multidisciplinary Nature of Environmental Studies. Introduction to Environment: Definition, Scope, and importance of environmental studies; need for public awareness. Environmental Pollution: Definition, Cause and effects of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Role of an individual in prevention of pollution, Pollution case studies.

Unit II : Natural Resources: Water resources: over-utilization, floods, drought, dams-benefits and problems; Mineral resources: Use and exploitation, environmental effects;

Food resources : changes caused by modern agriculture, fertilizer-pesticide problems, water logging.

Energy resources : Growing energy needs, renewable and non renewable energy sources; Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Unit III : Ecosystems and Biodiversity: Concept of an ecosystem, Structure and function, Energy flow, Ecological succession, ecological pyramids. Concept of Biodiversity, definition and types, Hot-spots of biodiversity; Threats to biodiversity, Endangered and endemic species of India, Conservation of biodiversity.

Unit IV: Social Issues and Environment: Water conservation, rain water harvesting, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, Public awareness. Population growth, variation among nations, Family Welfare Programme. Human Population and the Environment - Population growth, Population

Reference /Text Books:-

1.   A Textbook of Environmental Studies by Asthana D.K. and Asthana Meera
2.   Fundamental Concepts in Environmental Studies by Mishra D.D.
3.   Environmental Studies by S.C Sharma M.P Poonia
4.   Textbook of Environmental Studies for Undergraduate by ErachBharucha
5.   Environmental Studies: Third Edition by R. Rajagopalan
explosion, Women and Child Welfare.

Course Outcomes: At the end of the course, students will demonstrate the ability to:
1.   Develop concepts of basic environmental factors.

2. Introduce to the students the basic understanding of ecosystem and its structural and functional aspects and vast biodiversity
3. Outline aspects of environmental issues.
4. Understand the knowledge of energy resources and their environmental implications

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. The external theory examination shall carry forty marks only.
5. There will be nine questions in total from all four units. The question paper shall consists of two parts namely Part-A and B. Part-A shall be mandatory of 8 marks which shall carry short answered questions equally distributed from each unit. Part-B shall consists of four units and each unit shall carry two long answered questions of eight marks each and a candidate shall answer four questions selecting one question from each unit.

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PCC-FTP-212A   **FABRIC DEVELOPMENT AND ANALYSIS LAB**
L   T   P   Total   Credit: 1
0   0   2

Course Objectives:

- This Lab course is designed to demonstrate fabric formation techniques which includes working principles of winding, warping, drawing-in and weaving thus serving as a bridge between theory and practice.
- To give hands on training to students in understanding the fabric formation on looms, the mechanism involved and as well as developing creativity in designing unique fabric structures along with fabric analysis.

Experiment Contents

- To understand how woven fabric are manufactured on a loom
- To understand process sequence for woven fabric manufacturing to study the objective and passage of material on cone winding machine
- Line sketches of warping, sizing, drawing-in
- Description of important parts of a loom
- General passage of material through loom
- Basic loom mechanisms
- Ways to distinguish warp & filling yarns
- Analyse different types of weave designs
- Weave analysis, count and weight calculations, cover factor
- Use of strips of colored paper to produce different color and weave effects
- Characterize a woven fabric with respect to its dimensional properties
  - a. Thread density
  - b. yarn count
  - c. Yarn crimp
  - d. thickness
  - e. cover factor
  - f. areal density
  - g. weave
  - h. skewness

Suggested Text Books & References:

1. Navneet Kaur, Comdex Fashion Design; Fashion Concepts: Vol –I, Dreamtech press, 2010
2. Gokarneshan N., Fabric structure and design, New Age Publishers
3. Groscicki Z J, "Watson Textile Design and Colour", Newnes Buttersworth.
4. Nisbet H. "Grammer of Textile Design", D B Tarapore Wala sons and Co.

Course Outcomes:

After completion of the course, students will be able to:

- correlate between theory and practice of the concept of weaving preparatory methods

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- visualise the layout and structure of weaving preparatory machines along with their primary components
- visualise the mechanisms of primary motions of shuttle weaving machines
- recognise different types of weave designs
- analyse different constructional parameters of woven fabrics like yarn linear density, end and picks per unit length, fabric cover, fabric areal density.

Note:

1 At least ten experiments have to be performed in the semester out of which six experiments should be performed from above list. Remaining four experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus.
2 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
3 Electronic gadgets including cellular phones are not allowed in the examination.

4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTP-214A   **COLOUR AND DESIGN LAB**

L T P   Total Credit: 1

0 0 2

Course Objectives: This Lab course is designed to impart hands on experience of colour illusions, warm and colour effects, floral, geometrical designs, colour and weave effects. It also helps students practically understand in-depth working of placement of figures and motifs.

- To specify the colour with hue, value and chroma.
- Psychological effects of colours
- To show colour combinations according to pigment theory of colour.
- To show the arrangement of the primary, secondary and intermediate colours in the Brewster's theory.
- To show the warm and cool colour effects.
- To modify pigment colour with formation of tint, shades& coloured grays etc.
- Colour and gray intensity charts.
- To show the various colour combination tech in fabric.
- Types of lines and their effects.
- To produce floral, geometrical, abstract and border designs.
- Enlargement and reduction of designs.
- Simple Weave and colour effects.
- Compound colour and weave effects – stripe colour and weave effect, Check colour and weave effect, Special colour and weave effect, figured colour and weave effect.
- Placement of figures and motifs -- half drop, double ½ drop, diamond base, ogee base, rectangular, horizontal, vertical etc.
- To draw colour wheel.
- To arrange motifs/figures in symmetry and asymmetry patterns

Suggested Text Books & References:

1. Groscicki Z J, "Watsons Textile Design and Colour", Newnes Buttersworth, 1988.
2. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers, Delhi, 1983.
3. Hideaki Chijiiwa, Color Harmony - A guide to creative color combinations, 1994 edition.
4. Davis, Marian L., Visual Design in Dress, Prentice-Hall Inc., 1996.
5. Elizabeth Rouse, Understanding Fashion, BSP Professional Books, 1989.
6. Harold Carr and John Pomeroy, Fashion Design and Product Development, Blackwell Scientific Publications, 1992.
7. Howell, G., In Vogue, Conde Nast Books, 1991.
8. Penny Storm, Functions of Dress - Tool of Culture and The Individual, Prentice Hall, 1987.

Course Outcomes:

The students will be able to practically handle:

- Arrangement of figures and motifs in various methods
- Geometrical ornamentation,designcompostion
- Placement of Patterns in symmetry and asymmetry way;
- Creation of Border designing.

Note:

1 At least ten experiments have to be performed in the semester out of which six experiments should be performed from above list. Remaining four experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

2 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

3 Electronic gadgets including cellular phones are not allowed in the examination.

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PCC-FTP-216A   TRADITIONAL INDIAN EMBROIDERIES & TEXTILES LAB

L T P   Total Credit: 1
0 0 2

Course Objectives:

* This Lab course is designed to impart hands on experience of making Traditional Indian Textiles and embroideries. It also helps students practically understand the various stitches and embroidery techniques, traditional block prints, etc.

Contents:

Introduction to traditional textiles and embroidery work. Requirements of embroidery work. Tools and aids for traditional textiles and embroidery work. Sample preparation of different basic embroidery stitches such as stem stitch, chain stitch, herringbone stitch, cross stitch, open chain stitch, satin stitch, blanket stitch, button hole stitch etc. Preparation of atleast one end- article using basic embroidery stitches. Sample preparation of embroidereies of different states as mentioned with respective references to material, colour, thread, stitches and motifs: Chikankari, Phulkari, Kantha, Kashida, Kasuti, Sindh, Kutch, Chamba Rumal, Patch work, Appliqué. Learning the production techniques of traditional textiles as block printing, tie-dye, painted etc. Learning the machine embroidery techniques with the sample development.

Experiments

* Study of Tools and aids for Traditional Textiles and embroidery work
* Learning the production techniques of traditional textiles as block printing, tie-dye, painted etc.
* Practice of different basic embroidery stitches
* Preparation of atleast one end- article using basic embroidery stitches.
* Sample preparation of embroidereies of different states as mentioned with respective references to material, colour, thread, stitches and motifs
* Learning the machine embroidery techniques with the sample development.

Suggested Text Books & References:

1. Usha Shrikant, "Ethnic Embroidery of India", Honesty Publications..
2. Behra B. K., "Traditional Textile Designs of India".
3. Barnden Betty, "Embroidery Basics", Barson's.
4. Gillow, Traditional India Textile, Thames & Hudson, 1998

Course Outcomes:

After completion of the course, students will be able to:

- Learn traditional textiles of India practically
- Have practical exposure about embroidery stitches and techniques
- Learn the embroideries of different states of India

Note:

1. At least ten experiments have to be performed in the semester out of which six experiments should be performed from above list. Remaining four experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

2. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

3. Electronic gadgets including cellular phones are not allowed in the examination.

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PCC-FTP-218A   **PATTERN MAKING AND GARMENT MANUFACTURING LAB**

L T P

0 0 2   Total Credit: 1

Course Objectives:

- This Lab course is designed to impart first-hand experience of the recognition of different sleeves,Collars and Kids garment and how to construct the garment step by step.
- To give hand on practice on various Sleeves, Collars and kids wear garments.

Contents of Experiments:

Pattern Making and Construction Of Sleeves and Collars:

- Drafting of different commonly used sleeves as Plain, Megyar Sleeve, raglan, flared, leg'o'mutton,Cap Sleeve etc.
- Drafting of different collars as peter-pan, sailor, mendarin and shirt collars etc.

Construction of kids garment such as:

- Zabla
- Romper
- Basic Skirt and its variation
- Kids frock (Aline Frock)
- Apron

Suggested Text Books & References:

1. Jacob solinger ,"Apparel manufacturing handbook", VanNostrand Reinhold Company, 1980

2. Tyler. "Carr and Latham's Technology of Clothing Manufacturing" Blackwell.
3. Jones, Richard M., "Apparel Industry", Blackwell, 2nd Edition .
4. Chuter, Introduction to Clothing Production Management, Blackwell
5. Armstrong, Pattern Making for Fashion Design, Dorling Kindersley publication.

Course Outcomes:

After completion of the course, students will be able to:

- Recognize different types of tools, aids and equipment
- Prepare different patterns and practice of pattern layouts
- Develop practical skills relevant to garment construction, etc.

Note:

1 At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may

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either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

2   Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

3   Electronic gadgets including cellular phones are not allowed in the examination

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PCC-FTL -301A
L T P
3 0 0

TEXTILE COLOURATION TECHNIQUES

Total Credit: 3

Course Objectives:
The students will be able to:

- Understand the elementary knowledge and process line for pre-treatment.
- Learn the concept of dyeing of cellulosic, protein and synthetic textiles.
- Gain knowledge of dyeing and processing machinery.
- Develop skills for application of dyes on fabric and garments.

Unit 1

Elementary knowledge and Process line for pretreatment, Dyeing of textiles, Natural and added impurities in greige cotton fabrics. Overview of sizing, desizing, scouring operations with their objective, principal and mechanism, machinery used, general recipe, drawbacks and advantages. General introduction to bleaching and mercerisation with their objectives, mechanism, machinaries used, drawbacks and advantages.

Unit 2

General concept of dyeing. Brief about Dye-fibre interaction, dye uptake, shade percentage. General methods of dyeing by important classes of dyes on natural cellulosic (cotton), regeneratedcellulose (Viscose, Polynosic, modal, Loycell), e.g. direct, vat, azoic, sulphur, reactive dyes.

Unit 3

Pretreatment of wool and silk textiles. Dyeing of protein by acid and basic dyes and man-made (Polyester, Nylon, Acrylic and etc.), yarns, fabrics and garments, by acid, basic and disperse dyes etc., pigment dyeing. Introductory idea of dyeing of fibre, yarn and fabric on different dyeing machines.

Unit 4

Dyeing of denim using Indigo dye. Garment dyeing and processing: concept and machine used. Laundering, dry cleaning and Stain removals of textile. Rectifying and Stripping of dyes from substrate. Introduction of CCM and its applications in textile and garment industries

Suggested text books & references:

1. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers.
2. Chakarverty J N, "Fundamental and practices in colouration of textiles", Woodhead Publishing India Pvt Ltd, 2008
3. Trotman E R, "Textile Scouring and Bleaching", Griffin, 1968.
4. ShenaiVA, "Technology of Bleaching & Mercerising", Sevak Pub., Mumbai.
5. Gulrajani M L, "Chemical Processing of Silk".
6. Shenai V A,"Technology of Dyeing", Sevak Pub., Mumbai.
7. Trotman E R, "Dyeing and Chemical Technology of Textile Fibres", B.I. Publications Pvt. Ltd.
8. Hall David M, Chemical testing of textiles: a laboratory manual, Dept of Textile Engineering, AuburnUniversity, 1981

Course Outcomes:
After completion of the course, students will be able to:

- Understand the fundamentals of textile colouration and pre-treatments.
- Analyse the textile dyes and techniques for different fibres.
- Apply dyes on fabric and garments.
- Develop the sample of denim using indigo dye.

Note:

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2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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HSMC-FTL -301A

L T P

SUPPLY CHAIN MANAGEMENT

3 0 0

Total   Credit: 3

Course Objectives:

The students will be able to :

- Familiarize with supply chain and its concepts.
- Gain knowledge about the decision phases and role of drivers in Supply Chain.
- Familiarize with different techniques of supplier assessment.
- Understand the difference between Forward and Reverse supply chain and its application.

Unit-1

Introduction of Supply Chain, Supply Chain Concepts: flow of materials, flow of Information, Supply Chain Drivers.

Unit-2

Objective of supply chain, decision phases in a supply chain, process view of supply chain- cycle view and push/pull view, importance of supply chain flows.

Unit-3

Safety Inventory, cyclic inventory, role of sourcing in a supply chain – supplier scoring and assessment, supplier selection, design collaboration, procurement process, sourcing planning and analysis, procurement process, making sourcing decisions in practice.

Unit-4

Reverse supply chain (RSC), difference with forward supply chain, cost considerations involved, industries participation, factors leading to application of concept of RSC in specific industries and its restricted application, benefits, cost effectiveness of RSC compared to forward supply chain. Overview on critical path management, the role of IT in supply chain.

Suggested Text Books & References:

1. Martin Christopher, "Logistics & supply Chain Management: Strategies for Reducing Cost and Improving service", 2nd Edition, Pitman Publishing, 1998.
2. Sunil Chopra and Peter Meindl, "Supply Chain Management : Strategy, Planning and Operation", Prentice Hall Inc., 2001
3. Douglas Macbeth and Ferguson N., "Partnership Sourcing: An Integrated Supply Chain Management Approach", Financial Times Management, 1994

Course Outcome:

After this course the students will be able to:

- Understand various processes and drivers in a Supply Chain.
- Apply the role of decision phases in a Supply Chain.
- Understand and evaluate the supplier assessment practices.
- Analyze the difference between forward and reverse supply chain and to apply it in areas of fashion and textile.

Note:

1   Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2   The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3   Electronic gadgets including cellular phones are not allowed in the examination.

4   There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE
PEC-FTL- 301A   KNITTING STRUCTURE AND DESIGN DEVELOPMENT

L T P
3 0 0   Total Credit: 3

Course Objectives:
The students will be able to:

- Gain knowledge of knitted fabrics and their properties.
- Familiar with knitting machinery and mechanisms.
- Have adequate exposure of knitted fabric manufacturing techniques as well as ornamentation.
- Understand the knitting techniques, knitting elements and knitting machines.

Unit 1
Definition of knitting, History and culture of knitting, Classification of knitting, knitting elements: knitting needles, sinkers, cam systems, etc. Characteristics of knitting yarns.. Characteristics of warp knit and weft knit structure. Difference between woven and knitted fabric properties.,

Unit 2
Knitting cycles of Latch, Beard and Compound Needles. Fundamental Stitches: Knit, Tuck and float stitches and their uses. Properties and uses of basic weft knitted structures-Plain, Rib, Interlock and Purl..

Unit 3
Concept of loop length, Calculations for, Tightness factor, fabric cover, stitch density, areal density and knitting machine production calculation. Major Knitted fabric faults and their remedies.

Unit 4
Classification of warp and weft knitting machines: Flat, circular Raschal and Tricot machines. Types of Specialized/decorative knit: Lacoste knit, Cable knit, Milano ribs, Pointelle knit, Cardigans, Terry knit etc. Ornamentation of knitted fabrics. Characteristics of Raschal and Tricot structures and their uses.

Suggested Text Books & References:
1. Azgaonkar , "Knitting Technology", Universal Publishing Corporation, 1998.
2. Spencer , Knitting Technology, Pergamon Press.
3. Wignal H, Hosiery Technology, Plainfield, N.J.: Textile Book Service, 1968.
4. Irfan Ahmed sheikh, Pocket Knitting Expert, Irfan publisher
5. Terry, Knitted Clothing Technology, Blackwell

Course Outcomes:

After completion of the course, students will be able to:

- Learn the fundamentals of knitting structures and designs.
- Develop awareness about innovations in knitted fabrics, design and machinery.
- Analyze the production processes and calculation of knitted textile.
- Analyze the difference between warp and weft knitted structure.
- Develop skills for manufacturing different type of knitted garments.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE

PEC-FTL –303A   NONWOVEN TECHNOLOGY

L T P

3 0 0

Total Credit: 3

Course Objectives:

The students will be able to:

- Familiar with basic concepts of nonwoven.
- Understand nonwovens fabric properties as well as their applications.
- Gain knowledge of various manufacturing techniques of nonwoven.
- Have adequate exposure of various finishing techniques applied on nonwovens.

Unit 1

Introduction to Nonwovens, Historical Development, Definitions of nonwovens, classification of Non-Woven fabrics, Development of nonwoven industry & future perspective.

Raw materials: Natural and synthetic fibres, bonding agents, Types of bonding agent

Unit 2

Web formation techniques: fibre preparation, brief introduction to dry laying, wet laying, parallel laying, cross laying and random laying methods, spun laying, melt blowing, SM, SMS fabrics

Mechanical bonding: Needle punching technology, needle punching machine, felting needles, needle classification and their specifications, factors affecting the properties of needle punched fabrics.

Unit 3

Brief introduction to spun lacing technology, factors affecting the spun laced fabric, stitch bonding techniques.

Chemical bonding: Adhesive bonding, methods of bonding agent application, drying by convection, conduction, radiation, infrared and high frequency driers.

Thermal bonding: Thermal bonding techniques, Area bonding, point bonding & their properties

Unit 4

Finishing of nonwoven fabrics: shrinkage, calendaring, pressing, splitting, grinding, washing, dyeing, printing, softening, coating and laminating.

Applications: Medical and hygiene, apparel, household & home textiles, geotextiles, filtration, automotive textiles, agriculture, leather industry

Brief introduction to methods of testing nonwoven fabrics.

Suggested Text Books & References:

1. Luneschloss J and Albrecht W, "Non-Woven Bonded Fabrics" , Ellis and Horwood Ltd., UK,
2. Albrecht W, Fuchs H & Kittelmann, "Nonwoven Fabrics", Wiley-VCH Weinheim, 2003
3. Mrstina V & Fejgal F, "Needle punching textile technology", Elsevier,1990
4. Gulrajani M L, "Book of Papers of International Conference on Nonwoven", The Textile Institute, UK, 1992

Course Outcomes:

After completion of the course, students will be able to:

- Analyze the basic concepts of nonwoven formation.
- Develop the skills of selecting suitable raw material, process perametres as per the end application.
- Evaluate nonwoven materials and apply the appropriate technological skills in nonwoven industry.
- Apply the knowledge in product development in nonwoven industry.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3. Electronic gadgets including cellular phones are not allowed in the examination.

4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE
PEC-FTL-305A
L T P   **FASHION ACCESSORIES**
3 0 0
Total Credit: 3

Course Objectives:

- To impart knowledge of fashion accessories and different aspects involved.
- To understand the art of accessory designing so that they can complement their garment designs with appropriate accessories.
- To develop the skills and techniques of accessory designing and appreciate its commercial values.
- To familiarize the students with various materials used in making jewelry

Unit-1

Introduction to fashion Accessories and trims- their definition, Importance, use and classification (Labels and motifs, linings, interlinings, wadding lace, braid, elastic, hook and loop fastening, shoulder pads, eyelets and laces, zip fastner, buttons, metallic fastners). Different categorization of fashion/apparels based on gender, price factor, style, sizing of garments- men, women, kids.

Unit-2

Fashion accessories: Glove, Hosiery, Hats, Scarves, Handbags and belts their Material used, Construction, Care and styles.

Jewellery Designing: Different metals and stones, faceted cuts used for jewellery designing. Brief production tech as fusing, soldering, cutting etc, stone settings, Different jewellery styles as rings, bracelets, necklaces, tiara etc. Different stone setting as buttercup, inlay etc. Types of Jewellery – precious, costume, bridge.

Gemology- Introduction to gems, Basic qualities of gems and healing properties of gems.

Unit-3

Leathers: Different types of leathers, their properties and end uses. Leather Accessories: Brief idea about processing of leather, fashion leather terminology, care of leather. Leather Garments: Pattern making, needle and sewing thread specifications and finishing of garments.

Unit-4

Leather Footwear: Parts of shoe, brief shoe designing – as last, development last, pattern making, die-manufacturing, cutting, fitting, assemblage of remaining components, bottoming, finishing, caring of footwear.

Suggested Text Books & References:

1. Bina Abling "Fashion Sketch Book", Om Publication.
2. Frings," Fashion from Concept to Consumer 7th Edition", Pearson.
3. Tate. Inside Fashion Design, Dorling Kindersley
4. Meadows Celia Stall, Know your Fashion Accessories, Fairchild books, 2003.
5. Tyler, "Carr and Latham's Technology of Clothing Manufacturing" Blackwell, Scientific Publications, 1988.
6. Diamond Ellen and Diamond Jay, Fashion Apparel & Accessories and Home Furnishing, Pearsons Prentice Hall, NJ, 2007.
7.

Course Outcomes:

After completion of the course, students will be able to:

- Develop the skills of accessory illustration and visual merchandising.
- Create new accessory designs
- Make the design according to the garments.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PROFESSIONAL ELECTIVE

PEC-FTL-307A

L T P

3 0 0

CLOTHING SCIENCE AND COMFORT

Total Credit: 3

Course Objectives:

- To have basic understanding of fundamentals of clothing science.
- To gain knowledge on various aspects of clothing comfort.
- To know and understand various fibres, yarn and fabric properties influencing functional clothing.
- To have adequate exposure of current trends and new developments in the study of clothing.

Unit 1

Factors involved in the study of clothing. General functional description of clothing. Physiological and psychological aspects of fabric comfort. Heat and moisture relations in clothing.

Unit 2

Physical properties of clothing and clothing materials in relation to comfort; thermal resistance, water vapor resistance, wicking and air-permeability.

Unit 3

Influence of environmental conditions of the protective performance of garments. Field studies on the thermal protection of clothing. Brief introduction to Bending and shear properties, clothing fit and drape. Static electricity and comfort.

Unit 4

Aesthetic aspects of clothing. Influence of fiber yarn characteristics and fabric construction parameters on clothing comfort. Current trends and new developments in the study of clothing. New materials and finishes, new techniques, new concepts.

Suggested Text Books & References:

1. Saville B. P., Physical Testing of Textiles, Woodhead Publishing India Pvt Ltd
2. Improving Comfort in Clothing, Ed Song. G, Woodhead Publishing India Pvt Ltd
3. Das A and Alagirusamy, Science in Clothing Comfort, Woodhead Publishing India Pvt Ltd.
4. Fan J and Hunter L, Engineering apparel fabric and garment, Woodhead Publishing India Pvt Ltd.

Course Outcomes:

After completion of the course, students will be able to:

- Apply various aspects of clothing comfort.
- Evaluate various fibers, yarn and fabric properties influencing functional clothing.
- Apply the knowledge to assess physical properties of clothing in relation to fabric comfort
- Evaluate and analyse the physiological parameters required to achieve desired functionality in clothing.
- Explore current trends and new developments in the study of clothing.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

OPEN ELECTIVE

OE-FTL-301A ORGANISATIONAL BEHAVIOUR & HRM

L T P

3 0 0

Total Credits:3

Course Objectives:

- To impart knowledge of Organisational Behaviour & HRM
- To introduce the professional ethics and human values in present competitive business environment and competition.
- To learn the different aspect of corporate communication and Leadership
- To develop the techniques of induction programs in corporate environment.
- To familiarize the students with various wages and incentives planning

Unit 1

Understanding Organisational Behaviour: Definition, Goals of Organisational behaviour. Key forces affecting Organisational Behaviour. Fundamental Concepts of Organisational Behaviour.
Motivation: Meaning, Objectives and importance of motivation. Theories of Motivation, Maslow's theory, Mc Greger's Theory Herzberg's theory.
Morale: Meaning; Factors affecting morale, types of morale morale and productivity, Evaluation of morale, improving morale.

Unit 2

Communication: Definition & importance of Communcation; Formal & informal communication, Barriers in communication.
Leadership: Definition & importance, Nature of leadership various approaches to leadership styles.

Unit 3

Importance of human resources in industry, Definition of human resource management, mechanical approach towards personnel, Paternalism, Social system approach. Need for human resource planning, process of human resource planning, Methods of recruitment, Psychological tests and interviewing, Meaning and importance of placement, Meaning and techniques of induction. Training and development : Concepts of training and development, Importance of training and development, Management development its nature, purpose and method.

Unit 4

Significant factors affecting compensation, Methods of wage payment, Wage differentials, Causes of difference in Wages, Types of wage differentials, Wage incentives, Meaning, Objectives, types of incentive plans.

Suggested Text Books & References:

1. Human Resource and Personnel Management – K. Aswathappa–TMH Publ Company Ltd.
2. Personnel Management: C.B. Mamoria, Himalaya Publishing House.
3. Organisational Behaviour – Dr. L.M. Prasad (Sultan Chand & Sons).
4. Personnel Management & Industrial Relations: Dr. T.N. Bhagoliwal: Sahitya Bhawan Agra.
5. Personnel Management: V.G. Karnik, Jaico Publishing House.
6. Personnel management & Industrial Relation: Tripathi: Sultan Chand & Sons.
7. Personnel Management – Arun Monappa & Mirza Saiyadain –TMH Publishing Co. Ltd.
8. Principles of Personnel Management – Edwin B. Flippo (McGraw Hill).
9. Organisational Behaviour – K. Adwathappa.
10. Organizational Behaviour – John W. Newsstorn & Keith Davis, TMH, New Delhi.

Course Outcomes:

At the end of the course student will be able to:-

- Relate Organisational Behaviour in fashion Industry.
- Analyze corporate communication and Leadership
- Develop the skills, techniques and tools of HRM
- Perform incentive Planning process.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-303A   SOFT SKILLS AND INTERPERSONAL COMMUNICATION

L T P   Total Credit: 3
3 0 0

Course Objectives:
- To understand and aware about importance, role and contents of soft skills through instructions, knowledge acquisition, demonstration and practice.
- To possess knowledge of the concept of Self-awareness and Self Development.
- To help the students in building interpersonal skills.
- To develop skill to communicate clearly.
- To learn active listening and responding skills.
- To develop students overall personality.

Unit 1
Introduction to Soft skills, Knowing yourself, Self Assessment, Self Awareness, Thoughtfulness and responsible approach, Self Development: Etiquette & Manners, Emotion, Ego. Handling stress and Failures

Unit 2
Values and Belief Systems, Positive Attitude and Self Confidence, Art of listening-Art of reading-Art of speaking-Art of writing,

Unit 3
Communication and Its Interpretation: Definition, Types, Importance, Barriers, Overcoming barriers, Communication skills, Body Language, Interpersonal Skills/ Understanding Others Developing interpersonal relationship-

Unit 4
Time Management, Identifying one's strength and failures, Importance of First Impression, Priority Management, Team building-group dynamics-Net working, Improved work relationship. Responsibilities, Prioritize Your Work, Smart Work, Decision Making, Empowering and delegation, Motivating others

Suggested Text Books & References:
1. Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors,
2. Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055.
3. Developing the leader within you John c Maxwell
4. Good to Great by Jim Collins
5. The seven habits of highly effective people by Stephen Covey
6. Emotional Intelligence by Daniel Goleman
7. You can win by Shive Khera
8. Principle centred leadership by Stephen Covey
9. Communication Skills by Sanjay Kumar and Pushpa Lata, Oxford University Press.
10. Developing Communication Skill by Krishna Mohan, Meera Banerji, McMillan India Ltd.
11. Thinks and Grow Rich by Napoleon Hill, Ebury Publishing
12. Awaken the Giant Within by Tony Robbins Harper Collins Publishers,
13. Change Your Thoughts; Change Your Life by Wayne Dyer, Hay House India,
14. The Power of Your Subconscious Mind by Dr Joseph Murphy Maanu Graphics
15. The new Leaders by Daniel Coleman Sphere Books Ltd ,
16. Personality Development and Group Discussions by Barun K. Mitra, Oxford University Press.

Course Outcomes:

At the end of the course, student will be able to

- Make use of techniques for self-awareness and self-development.
- Develop right attitudinal and behavioural change
- Improve communication, interaction and presentation of ideas.
- Apply the conceptual understanding of communication into everyday practice.
- Implement teamwork and group discussions skills
- Develop time management and stress management.
- Apply business etiquette skills effectively.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

HSL-366*   **ESSENCE OF TRADITIONAL KNOWLEDGE**   Total Credit: 0

L T P
3 0 0

Course Objectives:

The students will be able to :

- Learn the concepts of Indian traditional knowledge.
- Know the Importance of roots of knowledge system.
- Understand different acts and legal concepts of traditional knowledge.
- Have exposure about development of science in ancient, medieval and Modern India.
- Learn basic understanding of Religion and Philosophy in ancient India

Unit 1

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, the physical and social contexts in which traditional knowledge develop, the historical impact of social change on traditional knowledge systems. Indigenous Knowledge (IK), characteristics.

Unit 2

Traditional knowledge vis-à-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge vis-à-vis formal knowledge. Protection of traditional knowledge: the need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy.

Unit 3

Role of Government to harness TK, Traditional knowledge and intellectual property: Systems of traditional knowledge protection, certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, the role of Gurukulas in Education System, Value based Education.

Unit 4

Science and Technology in Indian, development of science in ancient, medieval and modern Indian. Religion and Philosophy: Religion and Philosophy in ancient India, Religion and Philosophy in Medieval India, Religious Reform Movements in Modern India (selected movements only), Indian Fine Arts & Its Philosophy (Art, Technology & Engineering).

Suggested Text Books & References:

1. Traditional Knowledge System in India, by Amit Jha, 2009.
2. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, Pratibha Prakashan 2012.
3. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002.
4. "Knowledge Traditions and Practices of India" Kapil Kapoor, Michel Danino

Course Outcomes:

After successful completion of the course the students will be able to:

- Relate the concept of traditional knowledge and its importance in modern culture.
- Apply knowledge in preserving and protecting traditional knowledge.
- Develop knowledge and skills to streamline systems and patents for our indigeneous traditional knowledge.
- Develop his insight in Religion and Philosophy of Indian culture.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

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3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTP – 311A   PATTERN MAKING AND GARMENT CONSTRUCTION LAB

L T P
0 0 2

Total Credit: 1.0

Course Objectives:
The students will be able to:
- Understand the utility of seams gathers, shirring etc. as used in garments.
- Develop different garment pattern.
- Develop kids garment design.
- Design different women garments.

List of experiments: Designing, pattern making and garment construction of the following :-
1. Party wear dress for kids.
2. Kids night suit.
3. Plain Kurti.
4. Salwar and pajami.
5. Basic Skirt.
6. Four/Six kali Petticoat.
7. Basic Saree blouse.
8. One piece dress like gowns.
9. Plazzo, etc.

Suggested Text Books & References:
1. Armstrong, Pattern Making for Fashion Design, Dorling Kindersley publication.
2. Aldrich, Metric Pattern Cutting for Children wear & baby wear, Blackwell publication.
3. Aldrich, Pattern Cutting for Women tailored Jacket, Blackwell publication.
4. Holman, Pattern Cutting Made Easy, Batsford publication.
5. Cooklin, Pattern Grading Women's cloth, Blackwell publication.
6. Abling, Bina and Maggio, Kathleen, Integrating draping, drafting and drawing, Fairchild Books, Inc.
7. Connie Amaden Crawford, The Art of Fashion and Design, Fairchild Publications
8. Jaffe, Hilde and Relis, Nurie, Draping for fashion design, Pearson Prentice Hall
9. Draping for fashion design: Nurie Relis/ Hilde Jaffe, Reston publishing co.
10. Designs cutting and draping for special occasion clothes : for evening wear and party Wear, Drawn Cloak, Chryssalis

Course outcomes:
Students will be able to:
- Make different type of kids and women garment.
- Create design of different garment.
- Develop patterns of different garment.
- Develop different women wear.

NOTE: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus

L   T   P
0   0   2   Total Credit: 1.0

Course Objectives:
The students will be able to:
- Familiar with the application of desizing, scouring and bleaching
- Gain knowledge of dyeing of various kinds of fabric.
- Familiarize with CCM, water bath shaker machine, digital light fastness tester, laundrometer.

List of experiments:
1. Desizing of cotton by various methods and determination of desizing efficiency.
2. Scouring and determination of scouring efficiency.
3. Bleaching of cotton using hydrogen peroxide.
4. Mercerization of cotton.
5. Scouring and bleaching of wool.
6. Degumming and bleaching of silk.
7. Dyeing of cellulosic textiles by direct, reactive, sulphur and vat.
8. Dyeing of protein textiles by acid and basic dyes.
9. Dyeing of Polyester with disperse dye.
10. Dyeing of cotton/polyester blend.
11. Tie& dyeing.
12. Computer colour matching: Familiarization with the principles and working of computer colour matching instrument with preparing of database of dyes, shade matching, colour difference and measurement.

Suggested text books & references:
1. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers.
2. Chakarverty J N, "Fundamental and practices in colouration of textiles", Woodhead Publishing India Pvt Ltd, 2008
3. Trotman E R, "Textile Scouring and Bleaching", Griffin, 1968.
4. ShenaiVA, "Technology of Bleaching &Mercerising", Sevak Pub., Mumbai.
5. Gulrajani M L, "Chemical Processing of Silk".
6. Shenai V A,"Technology of Dyeing", Sevak Pub., Mumbai.
7. Trotman E R, "Dyeing and Chemical Technology of Textile Fibres", B.I. Publications Pvt. Ltd.
8. Hall David M, Chemical testing of textiles: a laboratory manual, Dept of Textile Engineering, AuburnUniversity, 1981

Course outcomes:
After completion of the course, students will be able to:

- Apply the practical exposure of textile processing techniques in clothing material.
- Use knowledge of dyes on cellulosic, protein and synthetic fabrics.
- Able to create different fabric samples with different dyes
- Evaluate different wet preparatory and dyeing processes of: wool, cotton and silk.
- Analyze the dyeing affinity with textile fabrics.

NOTE: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

PCC-FTP – 315A   **CAD LAB**   Total Credit: 1.0

L T P
0 0 2

Course Objective:
- To impart an understanding about the fundamentals, principles and application of CAD.
- To give hands on training to students on Photoshop and Corel Draw software's and their use in Fashion Designing field.
- To learn about print development, logo designing, making fashion illustration and designing with the help of softwares.
- To be familiar with various graphics approaches using design software.
- To have adequate exposure of photoshop software for designing and modification in designs.

List of experiments to be performed:

- **Introduction to CorelDraw:** Introduction to Vector and Raster Graphics Type. Starting CorelDraw, Introduction to Corel Draw Menu, Introduction to Corel Draw page Setup. Introduction to various tools of Corel Draw.
- Creating rectangles, squares, Circles, Ellipses, Polygons, Starts and Spirals
- Selecting Fill and Outlines to any shape.
- Moving & Rotating Shapes freely and to Fixed angles.
- Working with Drawing Curve and Straight Lines, Creating Simple and Artistic Texts.
- Working with Formatting Texts by changing Font, Size and Shape of Text.
- Rotating texts, Assigning a Fill, grouping objects.
- Special effects
- Drawing of fashion accessories using Corel draw.
- Drawing of Block Figure and different views using Corel draw.
- Drawing of Fleshing Figure (Croqui) by using Corel draw.
- Creating Textile Print by using Coral Draw.
- Draping the Fashion details on fashion figure.
- Design a garment for Children/men/women. (any approx 6 design by using theme) like Casual Wear, Formal Wear, Western Wear, Ethnic Wear, Street Wear etc.

Photoshop including 2D and 3D graphic design, other design software (textile and garments)
- Practical exposure on Adobe Photoshop.
- Different transformation features implementation.
- Designing the magazine cover page
- Cloning using Photoshop.
- Blending of different layers of images using Photoshop.
- Creating a mood board using Photoshop.

Course Outcomes:
At the end of the course students will be able to:
- Apply tools and techniques in creating basic shapes, figures using Corel Draw.
- Develop garment designing by using CAD softwares.
- Appreciate and aquire skills of Photoshop in Fashion.
- To utilize the software in apparel industry

Suggested Text Books & References:
1. CAD for Fashion Design by Renee Weiss Chase, Prentice hall Pub.
2. CAD/CAM Computer Aided Design & Manufacturing by Mikell P. Groover&Mory

1. W Zimmers. Jr, Pearson Education Pub.2000
2. CAD/CAM/CIM by R.Radhakrishnan, S.subramanyan, V.Raju, New Age
3. International Pub.
4. Fashion Design on Computers By M.kathleenColursy, Prentice Hall.2004.
5. Winfred Aldrich, CAD in Clothing & Textiles, Blackwell Science, 1994.
6. Adobe Photoshop and Textile Designl By Frederich L Chipkin
7. Beazley & Bond, Computer Aided Pattern Design & Product Development. Blackwell.
8. Mikcle P Groover, Emory W. Zimmers Jr., Computer Aided Design & Manufacturing.
9. Andeies Van Da Shvan K Feiner and John F Hughes, Computer Graphics Principles & Practices, Second Edition, James D Foley,
10. George Omura, Mastering AUTOCAD 2004 & AUTOCAD LT 2004,
11. Donald Mea, Computer Graphics, M & M Pauline Baker

Note: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above mentioned list. Remaining three experiments may either be performed from the above mentioned list or designed/set by the teacher as per the scope of the syllabus.

PSI-FTP – 311A	**INDUSTRIAL PRACTICAL TRAINING**
L T P	Total Credit: 2
0 0 0	

Course Objectives:

The students will be able to:

- Understand the procedures and practices being followed in Garment Industries.
- Understand the logic and principles of how the fashion brands work and how they perform their marketing startegies.
- Understand the various departmental working and coordination between the various departments.

Industrial training / field survey was conducted after fourth semester of four weeks in which student were supposed to carry out extensive training/ survey the market or industry. Students are required to collect and present various samples of apparels, fabrics, yarn, accessories, etc. However, assessment of the same will be carried out by faculty members.

Course Outcomes:

After completion of the course, students will be able to:

- Develop and anayse the brand starrgies in apparels
- Analyse the working of various departments of an export House.
- Analyse the functioning of various machines and tools operative in a Garment Manufacturing Unit.

PCC-FTL- 302A   TEXTILE COSTING AND PRODUCTION PLANNING

L T P   Total   Credit: 3

3   0   0

Course Objectives:

The students will be able to:

- Impart knowledge of Production, planning and control in apparel industry
- Learn the different aspect of work study and time study
- Study the Costing and different terms used in apparel industry.
- Develop the costing techniques of yarn, fabric and garment.

Unit 1

Introduction to Production planning and Control, its objectives, function, organization of (PPC) department, Method study – basic procedure of method study.Work measurement – uses of work measurement, data, basic procedure of work measurement, definition and scope of motion and time study.

Unit 2

Time study: Time study procedure, illustrative examples on computation of standard time, Co-ordination of activities, Layering and marker planning, Cutting room planning, planning of sewing room, Material management in clothing production, Quick response in apparel manufacturing, different production systems.

Unit 3

General Cost Concept: Classification of cost (Fixed, Variable, Semi-variable and Total Cost), Cost elements (direct, indirect), planning and storage of materials, pricing and control of materials, over head costs: Classification and accumulation, allocating service department costs, distribution and absorption, Methods of costing: Single or output costing, job order cost system, introduction to other methods of costing.

Unit 4

Cost control techniques: standard costing, Cost control and cost reduction, Costing in textile industry: Cost structure, raw material cost, labor cost and other expenses, Yarn realization, determination of cost per kg of yarn, per meter of fabric. Cost of dyeing/printing per meter fabric, Value loss, selling price decision of fabric, costing in apparel industry: Raw material cost, labor cost and other expenses, Cost analysis of different garments with example.

Suggested Text Books & References:

1. Chuter A J, "Introduction to Clothing Production Management",Blackwell.
2. Rajesh Bheda,"Production Management in Apparel Industry".
3. Rajesh Bheda,"Managing Productivity in Apparel Industry", C.B.S. Pub.
4. Sidney Packard, "Fashion Buying & Merchandising", Fairchild.
5. B.M.L. Nigam, G.L. Sharma,"Advanced cost accounting", Himalaya Publishing House, Delhi, 2007.
6. Holmes, G. and Sugden, A., Interpreting Company Reports and Accounts, Woodhead-Faulkner, 1999.

Course Outcomes:

At the end of the course, students will be able to:

- Evaluate about different types of production systems, production planning and control measures.
- Apply the skills of Work and method study for production planning and control and their efficient applications in apparel industry.
- Analyze the different costing techniques, cost control measures and different types of costing techniques.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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HSMC-FTL – 302 A   **PRINCIPLES OF FASHION RETAILING**

L   T   P   Total Credit: 3

3   0   0

Course Objectives:

The course is designed to:

- Impart knowledge of fashion retail formats and services being offered by them.
- Understand the role of Wholesalers and to differentiate with that of a retailer.
- Introduce various aspects of retail marketing mix and its elements.
- Familiarize the students with the changing dimensions of fashion Retailing.

Unit 1

Introduction to Retail and Retailing, fashion retailing - types of retail formats, retail formats operating fashion in India-franchised retail, chain store retailing, specialty stores, factory outlets, discount retailing, non store retailing like online retailing, level of service offered, franchising system-characteristics, retail marketing decisions.

Unit 2

Wholesalers-difference between retailers and wholesalers, types of wholesalers, major functions and services provided by wholesalers, product line of wholesalers, modes of physical distribution, marketing logistics, inventory management

Unit 3

Retail marketing –nature, concept and importance, objectives of retail marketing, retail marketing mix, mix planning and composition, key elements of retail mix, retail marketing planning and its types, retail buying sequence and communication. Various modes of fashion retail promotions. Influence of promotion on the business, limitations.

Unit 4

Changing dimensions of fashion retailing - growth of private labels: retailers into manufacturing, concentration of retail power, glcbalization of retailing, relationship marketing, partnerships, logistics and distribution.

Suggested Text Books & References:

1. Kitty G. Dickerson, Inside the Fashion Bussiness, 7th Edition, Pearson Education, India
2. Philip kotler and Kevin Keller, Marketing Management, 13th Ed, Prentice Hall Higher Education, 2008
3. Philip Kotler and Gary Armstrong, 13th Ed, Prentice Hall PTR, 2008
4. Mike Easey, Fashion Marketing, Blackwell Publishers, 2008

Course Outcomes:

At the end of the course, students will be able to:

- Analyze the fashion retail, various formats and levels of services offered by retailers.
- Develop the skills of differentiate fashion retailers and Wholesalers and their operations.
- Analyze the retail Marketing process and modes of Fashion sales Promotion.
- Implement the changes in dimensions of Fashion Retail and Globalization.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PCC-FTL-304A   TEXTILE AND GARMENT TESTING

L T P   Total Credit: 4

3 1 0

Course Objectives:

The students will be able to:

- Familiarize with basics concepts of textile and garment testing.
- Study the Influence of external variables like atmospheric condition, sample biasing and human errors in quality assessment.
- Gain knowledge about fundamental quality aspects of fibre, yarn and fabric.
- Understand about various textile testing instrument and their mechanism

Unit 1

Introduction and objectives of textile testing, Statistical terms, briefing about sampling, Sources of error, standard atmospheric conditions for testing and its effect on test results, Hygrometry and moisture relations of textiles: Moisture Regain and Moisture Content, factors affecting the regain, methods of measuring regain, equilibrium regain, hysteresis, Effect of moisture on physical properties, Linear density: Direct and Indirect system,

Unit 2

Overview of fibre length, fibre fineness, cotton fibre maturity, yarn twist, yarn crimp and yarn hairiness, fabric thickness, thread density, GSM and their role in influencing yarn/fabric properties,

Fabric properties and their measurement: Flexural rigidity, Drape, Crease Recovery, Pilling, Abrasion Resistance

Unit 3

Tensile properties, terminology used: load, elongation, tenacity, elastic recovery, yield point, modulus, work of rupture. work factor etc. factors affecting tensile testing, Principle and Measurement of Fabric tensile, tear and bursting strength, seam strength, water vapour permeability, wetting, wicking, water repellency and waterproofness

Unit 4

Measurement of air permeability, Flammability testing, fabric shrinkage ,measurement of colour fastness to light, rubbing and washing, durability testing of zippers, buttons, snap fasteners

Suggested Text Books & References:

1. Saville B P, Physical Testing of Textiles, Woodhead Publishing Ltd, Cambridge, 2002.
2. Kothari V. K., Testing and Quality Management, Ed. V. K. Kothari, IAFL Publications,
3. Booth J E., Principles of Textile Testing", CBS Publishers and Distributors, New Delhi,
4. Gopalakrishnan Angappan P & Komarapalayam R. , Textile Testing, SSM Institute of Textile Technology, 2002.
5. Irfan Ahmed sheikh, Pocket textile testing & Quality expert, Irfan publisher

Course Outcomes:

After completion of the course, students will be able to:

- Relate the importance, objectives and fundamentals of textile testing.
- Perform proper sampling techniques and procedures for testing.
- Evaluate the influence of fibre and yarn properties influence fabric/garment quality.
- Use analytical skills to assess different quality aspects.
- Develop insight into innovative quality product.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PCC-FTL -306A

L T P

3 0 0

TEXTILES PRINTING AND FINISHING

Total Credit: 3

Course Objective:

The students will be able to:

- Understand fundamentals, methods and styles of printing.
- Learn applications of printing to different fibres
- Familiarize mechanical and chemical finishes.
- Gain knowledge about the application of textile and garment industries.

Unit 1

Introduction of printing, Evolution in textile printing, Different methods of printing such as block, roller and screen printing, Construction and working mechanism, drawback and advantage of each method, Transfer Printing: Types, mechanism of transfer in each type and machineries, Printing Styles: Direct, discharge and resist styles of printing on textiles.

Unit 2

Brief concept of printing of cellulosic with direct, reactive and vat dyes; proteineous with acid dyes and synthetic textiles with disperse dye, Printing with Pigments: Fundamental concept, Advantage and disadvantages of pigment printing, Printing after treatments: Importance of steaming, curing, ageing of prints. Mechanism of each process. Special effects like – Batik, Tie and dye, crimp style, etc.

Unit 3

Introduction to textile finishing. Aim and scope. Classification of finishes. Concept of permanent and temporary finishes. Various finishes in industrial practices such as raising and shearing, drying. Calendaring - its types, construction and function of various calendaring m/cs, Brief concept of finishing of wool: Crabbing, decatising, milling, shrink finishing, etc.

Unit 4

General chemical finishes like softening, stiffening, delustering of rayon, polyester. organdy finish. Silky finish of polyester. Weighting of silk. Introduction and preliminary concepts of specialty finishes, Introduction and preliminary concepts of specialty finishes such as Soil and oil repellent finish, anti-static finish, antimicrobial finish, enzymatic finishes etc.

Suggested Text Books & References:

1. VA Shenai,"Technology of printing", Sevak Pub. Mumbai.
2. Clarke, "An introduction to textile printing", CBS Pub Delhi
3. R B Chavan ,"Textile Printing", Second annual Symposium,
4. Leslie W C Mile, Textile Printing, 2 Revised edition, Amer Assn of Textile, 2003.
5. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers
6. JT Marsh, An Introduction to Textile Finishing, Chapman and Hall, 2nd Ed, London, 1966.
7. Shenai V A, Textile Finishing, Sevak Pub., Mumbai.
8. J N Chakarverty, "Fundamental and practices in colouration of textiles", Wood Head Publication, India, 2008.

Course Outcomes:

At the end of the course, students will be able to:

- Make use of Textile printing and different printing techniques.
- Learn application of different printing pastes on textiles.
- Develop the skills of Textile finishing and different finishing techniques.
- Learn the application of different functional and specialty finishes.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PROFESSIONAL ELECTIVE

PEC-FTL-302A   **APPAREL MARKETING & MERCHANDISING**

L T P

3 0 0   **Total Credit: 3**

Course Objective:

The students will be able to:

- Understand the International Marketing Environment and modes of entering foreign Market.
- Familiarize with the Export Documentation and procedure.
- Understand the functioning and business process of an Export House.

Unit 1

Introduction to Domestic and International marketing. Difference between Domestic and International marketing, challenges for international marketing, core components of marketing, primary markets & secondary market their design and production. Present scenario of textile and apparel industry in India. Challenges and prospects of these industries.

Unit 2

International marketing environment, identifying foreign apparel markets, international marketing mix – PLC model, pricing decision, channels of distribution, promotion mix in international 9context. Modes of entering foreign market for apparel exports, merits and demerits of each method.

Unit 3

Exports – INCO terms, export procedure and documentation, export assistance – various schemes, sources of information, export promotion council etc., terms of payment, export finance.

Unit 4

Export houses – working of export houses, categories – star trading export house etc. Outsourcing merchandising, visual merchandising. Business process off shoring/Outsourcing, Concept of supply chain management. India's leading Export houses, Trends in apparel industry.

Suggested Text Books & References:

1. Elaine Stone ,"Fashion buying", McGRAW-HILL Book Company.
2. Varshney Roshanl Lal and Bhattacharya B., "International Marketing Management-An Indian Perspective", S Chand and Sons Publications, N Delhi.
3. "Nabhi's Publication on Export: Govt Handbook".
4. Sak Onkvisit and John J. Shaw, "International Marketing", Routledge, 2004
5. Philip R Cateora, "International Marketing", 11th Ed, McGraw-Hill Publication
6. Granger, M., Case Studies in Merchandising Apparel and Soft Goods, Fairchild, 1997.
7. Rabolt, N.J. & Miler, J.K., Concepts and Cases in Retail and Merchandising Management, Fairchild,1997.

Course Outcome:

After this course the students will be able to:

- Analyze the Current scenario of Indian Textile and Apparel industry.
- Develop understanding about export documentation and procedure.
- Learn the modes of entering the foreign market.
- Analyze the business model of Export Houses and concept of supply chain Management.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PROFESSIONAL ELECTIVE

PEC-FTL -304A   **APPAREL QUALITY MANAGEMENT**

L T P

3 0 0   **Total Credit: 3**

Course Objective:

The students will be able to:

- Familiarize the students with the role of Quality in Apparels and its categorization.
- Create clarity regarding the Inspection systems and tools of Quality Control.
- Familiarize with the contribution of various entities in Apparel organizations towards Quality.
- Understand the sampling procedure followed in Garment industries.

Unit 1

Meaning of quality, testing and standard and their importance in apparel industry – Quality terminologies- Sources of international standards. Quality Parameters of fabric and garment .
Quality –definition, classification of defects, Quality loop, inspection loop, stages of inspection, how much to inspect-arbitrary, statistical sampling, AQL, zones in garment evaluation,Quality function. Evaluation of quality cost, categorisation of quality costs, objectives of quality cost evaluation.

Unit 2

Role of quality management for Fashion Buyer - Role of fashion Buyer, Buying team, buying cycle - comparative shopping, directional shopping. Principles of TQM – Deming"s PGDCA Cycle - KAIZAN concepts – 5 „S" applications in apparel industry. Application of seven QC tools in apparel industry.

Unit 3

Inspection- purpose, inspection manuals, how much to inspect, random sampling etc. Quality standards- ISO-9000 series of standards, Quality assurance,Six Sigma. various care labelling symbols, different stages at which inspection is carried out and its effect on overall garment quality like raw material inspection- Fabric Inspection system : 4 point,10 point system and in process inspection.

Unit 4

Understanding procedures in sampling and sample development, different stages of samples and their requirements from Proto to Shipment sample Proto, fit, size set, pre production, TOP, sealer etc. Inspection: Incoming and raw material inspection: Fabric inspection – 4-point system. In process/ online inspection: Advantages – On line inspection during spreading, pattern making, cutting, sewing and ironing. Final inspection: Sampling plans and AQL charts – Level of final inspection. Packing & packaging quality tests. Care labeling and international care symbols.

Suggested Text Books & References:

1. Joseph Juran, "Hand book of Quality Control", McGraw Hill Publication.

2. John Oakland, "Total Quality Management: A pictorial guide for manager", Elseveir Publication.
3. Grant Eugene & Lavenworth Richard, "Statistical Quality Control", McGraw-Hill Series in Industrial Engineering and Management.
4. Rajesh Bheda, "Managing Productivity in Apparel Industry", C.B.S. Pub., Delhi.
5. Rajesh Bheda, "Productivity Through Quality", conference paper on '13th World Congress on Total Quality', C.B.S. Pub., Delhi.
6. Halen Goworek, "Fashion Buying", Blackwell.
7. Stamper, Evaluating Apparel Quality, Fair child
8. D.L.Shah Trust, ISO 9000 Quality Management System, DL Shah Trust.
9. Pradeep V Mehta, Managing the Quality in Apparel Industries, New Age International (P) Ltd, New Delhi – 1998 Edition.
10. Booth J.E, Principles of Textile Testing, CBS Publishers and Distributors, New Delhi, First Edition.
11. Kothari V.K. Testing and Quality Management, IAFL Publications, New Delhi, First Ed.1999.

Course Outcome:

After this course the students will be able to:

- Implement the Quality parameter in Apparels industry.
- Utilize the various tools of Quality control and Inspection systems.
- Evaluate the sampling procedure being followed in Garment Industries.
- Analyze the contribution of different entities towards Quality control.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-302A
L T P
3 0 0

DISASTER MANAGEMENT

Total Credit: 3

Course Objective:

The students will be able to:

- Learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. .
- Critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country.

Unit 1

Introduction Disaster: Definition, Factors and Significance; Difference Between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.
Repercussions Of Disasters And Hazards: Economic Damage, Loss of Human and Animal Life, Destruction of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.

Unit 2

Disaster Prone Areas In India : Study Of Seismic Zones; Areas Prone To Floods And Droughts, Landslides And Avalanches; Areas Prone To Cyclonic And Coastal Hazards With Special Reference To Tsunami; Post-Disaster Diseases And Epidemics.

Unit 3

Risk Assessment:Disaster Risk: Concept And Elements, Disaster Risk Reduction, Global And National Disaster Risk Situation. Techniques Of Risk Assessment, Global Co-Operation In Risk Assessment And Warning, People's Participation In Risk Assessment. Strategies for Survival.
Disaster Mitigation;-Meaning, Concept And Strategies Of Disaster Mitigation, Emerging Trends In Mitigation. Structural Mitigation And Non-Structural Mitigation, Programs Of Disaster Mitigation In India.

Unit 4

Disaster Preparedness And Management:-Preparedness: Monitoring Of Phenomena Triggering A Disaster Or Hazard; Evaluation Of Risk: Application Of Remote Sensing, Data From Meteorological And Other Agencies, Media Reports: Governmental And Community Preparedness. Disaster management and risk reduction in garment industry.

Suggested Text Books & References:

1. Singhal J.P. Disaster Management, Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423
2. Tushar Bhattacharya, Disaster Science and Management, McGraw Hill India Education Pvt. Ltd., 2012. **ISBN-10:** 1259007367, **ISBN-13:** 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Kapur Anu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi, 2010.
5. Pardeep Sahni, Madhavi malalgoda and ariyabandu, "Disaster risk reduction in south Asia", PHI
6. Amita sinvhal, "Understanding earthquake disasters" TMH, 2010.
7. Pardeep sahni, Alka Dhameja and Uma medury, "Disaster mitigation: Experiences and reflections", PHI

Course Outcome:

After this course the students will be able to:

- Differentiate the types of disasters, causes and their impact on the environment and society
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Analyze the Disaster Preparedness and Disaster Mitigation
- Implement disaster management techniques in garment industry.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

OPEN ELECTIVE

OE-FTL-304A
L T P
3 0 0

INTRODUCTION TO PHILOSOPHICAL THOUGHTS

Total Credit: 3

Course Objectives:

- To understand the students the way we think and live
- To develop skills that are essential in the pursuit of every discipline.
- To gain knowledge and an insight into our thought patterns and become aware.
- To have self awareness and self development
- To gain wisdom through teachings of great philosophers.

Unit 1

Introduction to philosophy thought, Importance of philosophy, Main branches of philosophy, Epistemology, Metaphysics, Ethics, Aesthetics, Logic.

Unit 2

An introspection into I, Nature, Layer of Existance, Purpose of life, Conciousness, Deep philosophical questions, What is freedom, meaning of life, human consciousness, life and death,

Unit 3

A brief introduction of Indian philosophers their teachings. A brief introduction of world philosophers their teachings.

Unit 4

Philosophical thoughts, Thought experiments, purpose of thought experiments, Emotions, Ego, Love, Philosophy Vs Science

Suggested Text Books & References:

1. The philosophy book: Big ideas Simply Explain
2. Philosophy 101: From Plato and Socrates to Ethics and Metaphysics, an Essential Primer on the History of Thought (Adams 101
3. The Great Philosophers: The Lives and Ideas of History's Greatest Thinkers by Stephen Law(2016-07-26)
4. Basic Teachings of the Great Philosophers by S.E. Frost

Course Outcome:

After this course the students will be able to:

- Identify the way we think and live
- Implement skills that are essential in the pursuit of every discipline.
- Analyze the insight into our thought patterns and become aware.
- Create self awareness and self development
- Analyze wisdom through teachings of the great philosophers

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PCC-FTP-312A   **APPAREL DRAPING AND GRADING LAB**
L T P
0 0 2   Total Credit: 1.0

Course Objective:

- To give hands on training to students on apparel construction techniques-basic block, dart manipulation.
- To acquire the knowledge and skills for construction of various garment parts with draping.
- To appreciate and develop different garment components like types of collars and sleeves.

List of experiments:

- Introduction to draping and dress forms. Preparation of fabric.
- Draping Terminology – Apex, Balance, Plumb line, Trueing, Blocking; Blending, Princess line, Clipping and marking.
- Draping of Bodice Front, Bodice Back and variation.
- Draping of Basic skirt and skirt variations.
- Draping of neckline –Cowl
- Design and construct a final garment applying draping techniques.
- Design Analysis and the three major pattern making principles
  Dart Manipulation – Using Slash and Spread technique and Pivotal Transfer technique (Single dart series – Mid shoulder dart, Center front dart, French dart, mid armhole dart and bust dart.
  Double dart series:
  Slash and Spread Method- Waist & Side Dart, Mid Shoulder& Waist Dart, Mid Armhole& Waist Dart
  Pivotal Method- Shoulder Tip& Waist, Center Front & Waist Dart.
- Introduction about Pattern Grading. Methods of pattern Grading . Advantages and Disadvantages of pattern grading. Grading bodice and sleeve block to various sizes.

Course Outcomes:

At the end of course student will be able to:

- Analyze different pattern making and grading techniques.
- Evaluate different dart manipulation method and able to apply them.
- Create different type of sleeves, collars with draping.
- Create yokes and neckline with draping.

Suggested Text Books & References:

1. Armstrong, Pattern Making for Fashion Design, Dorling Kindersley publication.
2. Aldrich, Metric Pattern Cutting Men's wear 4th Ed., Blackwell publication.
3. Aldrich, Metric Pattern Cutting for Children wear & baby wear, Blackwell publication.
4. Aldrich, Pattern Cutting for Women tailored Jacket, Blackwell publication.
5. Holman, Pattern Cutting Made Easy, Batsford publication.
6. Cooklin, Pattern Grading Men's cloth, Blackwell publication.
7. Cooklin, Pattern Grading Women's cloth, Blackwell publication

PCC-FTP – 314A   **TEXTILE PRINTING AND FINISHING LAB**

L   T   P

0   0   2   Total Credit: 1.0

Course Objective: To provide hands on practice of:
- Various printing methods on different type of fabrics.
- Applications of different printing techniques.
- Finishing of textiles with mechanical as well as chemical processes.

List of experiments:
1. Printing of cotton fabric using direct and reactive dyes.
2. Printing of wool and silk fabrics using acid dye.
3. Printing of nylon fabric using acid dye.
4. Printing of polyester fabric using screen printing at heat setting machine.
5. Printing of fabrics using screens.
6. Anti-crease finishing of cotton fabric.
7. Softening finishing of textiles.
8. Fragrance finishing of textiles.
9. Optical brightening finishing of textiles.
10. Water repellent finishing of textiles.

Course Outcomes:

At the end of the course students will be able to:
- Perform printing of different types of textiles.
- Evaluate different printing techniques.
- Apply finishing of textiles using mechanical as well chemical processing.
- Analyze functional behavior of finished textiles.

Suggested Text Books & References:
1. VA Shenai,"Technology of printing", Sevak Pub. Mumbai.
2. Clarke, "An introduction to textile printing", CBS Pub Delhi
3. R B Chavan ,"Textile Printing", Second annual Symposium,
4. Leslie W C Mile, Textile Printing, 2 Revised edition, Amer Assn of Textile, 2003.
5. Gohl E P G and Vilensky LD, "Textile Science", CBS Publishers, Delhi, 1983.
6. An Introduction to Textile Finishing, JT Marsh
7. VA Shenai Textile Finishing, Sevak Publication, Mumbai
8. Chakarverty J N, "Fundamental and practices in colouration of textiles", Woodhead Publishing India Pvt Ltd, 2008

Note: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above mentioned list. Remaining three experiments may either be performed from the above mentioned list or designed/set by the teacher as per the scope of the syllabus.

PCC-FTP -316A   **TEXTILE AND GARMENT TESTING LAB**

L T P

0 0 2   Total Credit: 1.0

Course Objectives:

The students will be able to:

- Know about principle and mechanism of testing equipments.
- Understand precision and error calculation in measurements.
- Have adequate hands on experience of the various textile testing instruments.
- Familiarize with sample preparation techniques and procedures of textile testing.
- Gain understanding of external influencing parameters affecting results.
- Know report writing and calculation involved.

List of Experiments:-

1. Determine moisture regain and moisture content of given fibre/yarn or various fabric samples by oven dry method.
2. To determine the bending length and flexural rigidity of a given sample with the help of Stiffness Tester both in warp and weft direction.
3. To find crease recovery of a given particular sample of fabric in warp and weft direction by measuring the angle of recovery using Crease Recovery Tester. Observe effect of loading time and recovery time on crease recovery.
4. To assess and find the drape coefficient of a fabric. What are the factors which may affect drape of a fabric.
5. To determine the GSM of various kind of factors. What are the factors which may affect the GSM.
6. To find out the strength of a given fabric in warp and weft direction using Tensile Strength Tester, taking three different strip sizes and see the effect of strip length on fabric strength.
7. To find out thickness of various fabric samples using Cloth Thickness Tester under a specific pressure.
8. Determination of linear density of yarns from package.
9. To find out fabric construction details of given fabric samples.
10. To find out the T.P.I of single/double yarn at various gauage length
11. To find out tearing strength of a given fabric sample using the Elmendorf Tear Tester.
12. To find out the abrasion resistance of various kind of fabrics.
13. To find out the pilling resistance of given fabric samples
14. To check the dimensional stability of given fabric samples.
15. To check the rubbing fastness of different kind of fabrics.
16. To check the colour fastness of given fabric samples.

Suggested Text Books & References:

1. Saville B P, Physical Testing of Textiles, Woodhead Publishing Ltd, Cambridge, 2002.
2. Kothari V. K., Testing and Quality Management, Ed. V. K. Kothari, IAFL Publications,
3. Booth J E., Principles of Textile Testing", CBS Publishers and Distributors, New Delhi,

4. Gopalakrishnan Angappan P & Komarapalayam R. , Textile Testing, SSM Institute of Textile Technology, 2002.

5. Irfan Ahmed sheikh, Pocket textile testing & Quality expert, Irfan publisher

Course Outcomes:

After completion of the course, students will be able to:

- Perform proper sampling techniques and procedures for testing.
- Evaluate the influence of fibre and yarn parameters on fabric/garment quality.
- Develop analytical skills to assess different quality aspects.
- Develop insight into innovative quality product .

NOTE: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above list. Remaining three experiments may either be performed from the above list or designed & set by teacher as per the scope of the syllabus.

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PROFESSIONAL ELECTIVE

PEC-FTL -401A   **HOME TEXTILE**

L T P

3 0 0   Total Credit: 3

Course Objectives:

The students will be able to:

- Impart knowledge on various home fashion product range, their properties, designing aspect and applications.
- Understand the basic principles acoustical insulation to interior spaces
- Familiarize with various methods to manage sound.
- Understand/stat the difference between Interior decorators and Interior designers.
- Familiarize the students with Recent developments in furnishing, floor covering and other home textile product.

Unit 1

Introduction to Home Fashion, interior Product Classifications; Widely used interior fabrics, Decorative fabrics; home fabrics, Soft floor coverings, Residential and commercial interior, Interior decorators and Interior designers. Interior design and Home decoration ,Factors affecting interior design. Traditional and modern overview.

Unit 2

Upholstery fabrics; their properties, standard performance specifications for woven upholstery fabrics, upholstery fabrics in use- application terms, upholstery fabric on furniture. Furnishings ; Developments in Textile Furnishing – Type of Furnishings Materials – Woven and non-woven – Factors affecting Selection of Home Furnishings.

Flame resistance of upholstered fabrics, filling and padding of upholstered furniture, care and maintenance.

Unit 3

Floor Coverings :- Recent Developments in manufacturing of floor coverings -Hard Floor Coverings, Resilient Floor Coverings, Soft Floor Coverings, Rugs, Cushion and Pads – Care of floor coverings.

Carpets; manufacturing methods, Woven Vs tufted carpet, types of carpet pile, carpet construction terms, fibres, yarns, dyeing, printing, and finishing for carpets, carpet underlay, carpet flammability, Traffic classification, carpet soiling, carpet maintenance, methods of cleaning, factor evaluating carpet quality.

Unit 4

Curtains and Draperies;- Advances in Home decoration -Draperies – Choice of Fabrics – Curtains – Types of Developments in Finishing of Draperies – Developments in tucks and Pleats and uses of Drapery Rods, Hooks, Tape Rings and Pins.

Window fabrics and window blinds, how fibre properties, yarn and fabric construction, dyes and prints affect window fabrics, fabric finishing for window fabrics, Wall and Ceiling coverings, manufactured products, Bedding products; sheets, pillowcases, blankets, bedspread, quilts and comforters, mattresses.

Introduction to acoustics, objectives of acoustics,Advanced technology in acoustics. Acoustics and environment - Introduction, material and its types, methods, applications and its benefits and advantages.

Suggested Text Books & References:

1. Billie J. Collier, Martin Bide & Phyllis G. Tortora, Understanding Textiles, Publisher; Pearson, Prentice Hall Publication Ltd, Seventh edition, , Cambridge, 2000
2. Navneet Kaur, Comdex Fashion Design; Fashion Concepts: Vol –I, Dreamtech press, 2010.

3. N.Gokarneshan, Fabric structure and design, New Age Publishers.
4. Groscicki Z J, "Watson Textile Design and Colour", Newnes Buttersworth.
5. Diamond Ellen and Diamond Jay, Fashion Apparel & Accessories and Home Furnishing, Pearsons Prentice Hall, NJ, 2007.
6. Alexander.N.G., "Designing Interior Environment", Mas Court Brace Covanorich, Newyork, 1972
7. Donserkery.K.G., "Interior Decoration in India", D.B.Taraporeval Sons and Co. Pvt. Ltd., 1973
8. Wingate I.B. & Mohler J.F., "Textile Farbics & Their Selection", Prentice Hall Inc., New York, 1984

Course Outcomes:

After completion of the course, students will be able to:

- Produce Interior Products.
- Create interior designs.
- Identify Carpet pile and their constructions.
- Analyze all the window fabrics and bedding products.
- Evaluate the production method of different types of home textile products

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE

PEC-FTL-403A **FASHION COMMUNICATION**

L T P

3 0 0

Total Credit: 3

Course Objective:

The Students will be able to:

- Gain knowledge of a communication plan with particular attention in the phases of organization and events.
- Understand the fashion language & skills of communication for visualization of garment.
- Understand all the phases of the communications process within the fashion industry.
- Identify research methodologies of style and the action of publicity strategies in both the new and traditional media.

Unit 1

Communication, Communication Plan, Ways of Communication, Need for promotion of fashion, Fashion communication, Promotion of fashion communication, Need for the communication process, objectives, barriers and purpose of effective communication. Types of communication- oral, written, gesture, needs and functions. Media and public relation in fashion communication. Fashion Vocabulary.

Unit 2

Fashion presentation skills, importance of interview, techniques, fashion dialogues, group discussions. Styling, body language and self presentation skills. Communication of the fashion event , Catalogues, Broachers , Layouts for exhibition, Choreography for Ramp walk, Reporting events, Scripting shows, Critics of fashion.

Corporate Communication: Business letter, emails, report writing, Agenda and minutes of the meeting.

Unit 3

Understanding of web and multimedia design, computer graphics, illustration, product design, exhibition design, visualizing and art direction, typography and photography as communication tools. Styling and its introduction, Introduction to Fashion Journalism, Display and Exhibit design, Fashion Communicative devices in commercial publicity: letter styles, designs, pictorial presentation, slogans, colour variations. Tech Pack, Study of tech pack, Industry Tech pack, relating a spec sheet with garment, making a spec sheet.

Unit 4

Fashion campaign, Brochure Design, Cover Story, Theme Pavilion at Fairs, Public relation communication effectiveness, formal and informal communication ability, inter personal skills and rapport, Common fashion terminologies across the world.

Fashion Advertising, Objectives and Types of Advertising, Semiotics Study, Fashion Photography, Media Planning. Introduction to visual merchandising, Need of Visual Merchandising, Visual Merchandising: contents and various features and its terminology like foot falls, conversion ratio.

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Course Outcome: Students will be able to
- Create work in the affiliate stream of Fashion Communication.
- Analyze the plan and develop communication strategies, promote events, and write articles as fashion journalists and learn the basic nuisances of fashion photography.
- Evaluate and Promote their work through fashion advertising & communication.
- Analyze Plan and execute events & activities of fashion industry.

Suggested text books & references:
1. Fashion Advertising & Promotion (Arthur A. Winters & Stanley Goodman) by Fairchild
2. Visual Merchandising and Fashion(Sarah Bailey, Janathan Baker), by Bloomsbury
3. Visual Merchandising and Display(Martin M. Pegler) by Fairchil

Note:
1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

OPEN ELECTIVE

OE-FTL-401A   **PRINCIPLES OF MANAGEMENT**

L   T   P.   Total   Credit: 3

3   0   0

Course Objectives:

The student will be able to :

- Understand the science of management.
- Understand the basic principles of planning and Decision Making.
- Familiarize with various methods of Organising.
- Familiarize the students with the process of Directing and Ladership and Leadership Control

Unit 1

Introduction to management: Science as well as Art, Management and Administration – brief out lines of Management Thoughts, Process of Management- Planning: Nature and Purpose - Steps involved in Planning- Objectives- Setting Objectives- Process of Managing by Objectives- Strategies, Policies and Planning Premises- Forecasting – Decision making.

Unit 2

Nature and Purpose, types of organisation structure, Organising: departmentation by difference, Line and Staff authority, Benefits and Limitations, De-Centralization and Delegation of Authority, Staffing – nature and process, brief concept and role of HRD.

Unit 3

Directing: Scope - Human Factors - Creativity and Innovation - Leadership-Types of Leadership, styles and qualities of leadership, Motivation: meaning, types, significance and motivational theories.

Unit 4

Controlling: Management control- concept and process, overview of control techniques (traditional and modern), managing ethics and social responsibility. The Global Environment - Globalisation and Liberalisation, Introduction to RTI act.

Suggested text books & references:

1. Robbins, S.P. and Decenzo, D. A., Fundamentals of Management, pearson Education Asia, New Delhi.
2. Harold Kooritz and Heinz Weihrich, Essentials of Management, Tata McGraw-Hill, New Delhi,1998
3. Joseph L. Massie, Essentials of Management, Prentice Hall of India, Pearson Fourth Edition, New Delhi, 2003.
4. Tripathy P.C. and Reddy P.N., Principles of Management, Tata McGraw-Hill, New Delhi,1999.
5. Decenzo David and Robbins Stephen A., Personnel and Human Resource Management,Prentice Hall of India, New Delhi,1996.
6. JAF Stomer, Freeman R. E and Daniel R Gilbert, Management, Pearson Education, Sixth Edition, New Delhi, 2004
7. Robins and Coulter, Management, PHI, New Delhi.

Course Outcomes:

After completion of the course, students will be able to:

- Implement the process of Managment planning.
- Implement Organising in a enterprise.
- Implement the process of Directing,controlling.
- Analiyze the Global Environment with ideas of Globalisation and Liberalisation.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-403A   **ENVIRONMENTAL POLLUTION CONTROL**

L T P

3 0 0   Total Credit: 3

Course Objective:

- To educate the students about the environmental concerns and various issues related to textiles, apparel and allied industries with their remedial solutions to control pollution.
- To aware the students about impacts of air, water, soil and management of solid waste in apparel sector.
- To sancitize the students about the importance of natural resources and their conservation.
- Understanding the Social Issues and the impact of Population on the Environment.

Unit 1

Air pollution – definition, sources-natural and anthropogenic, classification of air pollutants, history and causes of air pollution, effects of air pollutants on human, plants, animals, materials and environment, air quality standards, control of air pollutants.

Unit 2

Water pollution – definition, sources, classification of water pollutants, waste water characteristics, effects of water pollution, drinking water standards, control of water pollution, textile industry and water pollution, environmental impacts of textile industry.

Unit 3

Solid wastes- environmental, aesthetic and health risk; sources, generation, composition of solid wastes, storage, collection and transportation of urban solid waste, disposal and management of solid waste-sanitary landfills, composting, vermin-composting, incineration, reuse and recycling.

Unit 4

Environmental management – environmental management in textile industries, environmental auditing, environmental impact assessment, Air (Prevention and Control of Pollution) Act, 1981, Water (Prevention and Control of Pollution) Act, 1974 and Environment (Protection) Act, 1986.

Suggested text books & references:

1. Air Pollution – Perkin H.G,
2) Handbook of solid waste Disposal and Management - Pavani, J. L
3) Waste Water Engineering: Treatment, Disposal, Reuse- Metcalf and Eddy Inc.
4) Environmental Impact Assessment - Canter. L
5) Environmental Chemistry- Dey .A.K
6) Introduction to environmental engineering and science - Gilbert Masters
7) Air pollution and control - K.V.S.G. Murlikrishan
8) Solid Waste Management CPCB. New Delhi.

Course Outcomes:

At the end of the course student will be able to:

- Identify major environmental issues of textile industry and their solution.
- Obtain basic knowledge on environment pollution, its types and various kinds of pollutants.
- Develop concepts of national environmental issues and their possible solutions.

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2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-405A   **HISTORY OF SCIENCE AND TECHNOLOGY**

L T P

3 0 0   **Total Credit: 3**

Course Objective:

The students will be able to:

* Begin and develop of various branches of science in ancient India.
* Develop in Science and Technology in Colonial India.
* Knowledge of establishment of different reaserch organization in Indian and renowned scientist of India.
* Familiarize the Prominent scientist of India.

Unit 1

Science and Technology- The Beginning, Development in various branches of Science in Ancient India: Astronomy, Mathematics, Medicine and Engineering, Developments in metals: Use of different metals like Copper, Bronze and Iron in Ancient India. Geography in Ancient Indian Literature.

Unit 2

Developments in Science and Technology in Medieval India, Scientific and Technological Developments in Medieval India; Influence of the Islamic world and Europe; Developments in the fields of Mathematics, Chemistry, Astronomy and Medicine. Improvements in the field of agriculture - new crops introduced new techniques of irrigation etc.

Unit 3

Developments in Science and Technology in Colonial India, Early European Scientists in Colonial India- Surveyors, Botanists, Doctors, under the Company's Service. Indian Response to new Scientific Knowledge, Science and Technology in Modern India: Development of research organizations like CSIR and DRDO; Establishment of Atomic Energy Commission; Launching of the space satellites.

Unit 4

Prominent scientist of India since beginning and their achievement, mathematics and Astronomy: Baudhayan, Aryabhtatta, Brahmgupta, Bhaskaracharya, Varahamihira, Nagarjuna. Medical Science of Ancient India (Ayurveda & Yoga): Susruta, Charak, Yoga &Patanjali. Scientists of Modern India: SrinivasRamanujan, C.V. Raman, Jagdish Chandra Bose, SatyendraNath Bose, HomiJehangirBhabha and Dr. Vikram Sarabhai, A. P. J. Abdul Kalam.

Suggested Text Books & References:

1. R. Parthasarathy, Paths of Innovators In Science, Engineering and Technology, EastWest Books (Madras) Pvt. Ltd, 2000.
2. Glimpses of India's Statistical Heritage, Edited by: J.K. Ghosh, S.K. Mitra, K.R. Parthasarathy, Wiley Eastern Limited, 1992.
3. Jagjit Singh, Some Eminent Indian Scientists, Publications Division, Ministry of Information and Broadcasting, Government of India, 1991.
4. B.C. Berndt and R.A. Rankin, Ramanujan: Essays and Surveys, Hindustan Book Agency, 2003.

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5. Robert Kanigel, The Man Who Knew Infinity, A Life of the Genius Ramanujan, Rupa& Co., 1992.
6. SubrataDasgupta, Jagadish Chandra Bose and the Indian Response to Western Science, Oxford University Press, 1999.
7. ChintamaniDeshmukh, HomiJehangirBhabha, National Book Trust, India, 2003.

Course Outcomes:

At the end of the course student will be able to:

- Identify Prominent scientist of India since beginning.
- Evaluate Ancient India's developments in different branches of Science and technology.
- Analyze Scientific and Technological Developments in Medieval India.
- Developments in Science and Technology in Colonial India and early European scientists.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-407A   **HISTORIC COSTUME**

L T P   **Total Credit: 3**

3 0 0

Course Objective:

Students will be able to:

- Understand and discuss the fabric, style, color, and fashion terminology used to identify characteristics of fashions of the past and present.
- Familiarize with Origin, Theories of clothing and Principles of clothing.
- Introduce the evolution of clothing and fashion since civilization to modern era.
- Familiarize with Ancient Indian Civilizations of different eras.
- Impart knowledge on various Traditional Costumes of India.

Unit-1

Origin of clothing. Objectives of costumes, main archetypes of costumes. Principles of clothing and fashion. Theories of clothing-Protection, adornment, modesty & combined need theory, etc.

Unit-2

Traditional Costumes of India: Types of costumes and Ornament for male and female, significance of culture and rituals.

Costumes of Northern States:- Jammu and Kashmir, Haryana, Punjab, Uttar Pradesh.

Costumes of Western States:- Maharashtra, Rajasthan

Costumes of north-Eastern States:- Assam, Manipur

Costumes of Southern States:- Kerala, Andhra Pradesh

Costumes of Central States:- Madhya Pradesh, Orissa

Unit-3

A brief study of the ancient Indian Civilizations:-

Indus Valley Civilization:-Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear.

Mauryan and Sunga Period:- Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear

Kushan Period:- Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear

Unit-4

A brief study of the ancient Indian Civilizations

Gandhara Period:- Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear

Gupta Period:- Women's Costumes-dresses, jewellery, hairstyles, footwear.Men's costumes - dresses, jewellery, hairstyles, footwear

A brief study of the Medieval period (Mughal Period):- Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear

A brief study of the Rajput period:- Women's Costumes-dresses, jewellery, hairstyles, footwear. Men's costumes - dresses, jewellery, hairstyles, footwear

Suggested Text Books & References:

1. Vishnu arora, Suvasas, the beautiful costume, Abhishek publication, 2008
2. Manmeet Sodhi, History of Fashion, Kalyani publisher
3. Cumming P.E, The dictionary of fashion history, Berg

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4. Costumes of India and Pakistan by S. N. Dhar.
5. Costumes of India by Dhar.
6. Fashion Drawing how to do it by Hazal R. Boteu and Constance Boulard Publishers – Haper and Row, New York.
7. Costume and Fashion – a complete history by Browioyn cosqrsue octopus publishing group Ltd.

Course Outcomes:

After completion of the course, students will be able to:

- Identify historic fashion details reflected in the fashion designs of current designer's
- Evaluate and identify costumes of various periods for authenticity, fit, and appearance on a body in motion when viewing historic/period videos.
- Aalyze an informational text about the history of fashion and costume.
- Design a modern outfit inspired by a specific era.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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PCC-FTL-411A   ADVANCE CONSTRUCTION AND HOME FASHION LAB

L T P   Total Credit: 1.0

0 0 2

Course Objective:

Students will be able to:

- Make designs of men's garments.
- Understand about the basic pattern making of men's garments.
- Construct men's wear.
- Design and construct home fashion products.

List of experiments:

- Pattern making and Construction of Men's garments:
1. Trouser
2. Waistcoat
3. Kurta
4. Pyjama
5. Shirt
- Designing various home product range like Pillow cover, cushion cover, creating artistic work on bed sheet, curtains, drapery, wall hangings, neck pillow and sleep mask, designed bag, fancy felt pin cushion, monogram design, hanging organizer, cloths for kids, table cloth dress, soft floor coverings, filling and padding of upholstered furniture, window covers, quilts and comforters.

Course Outcomes:

At the end of course the student will be able to:

- Create patterns of different men's wear.
- Construct different garment of men.
- Analyze different home furnishing products.
- Construct different home furnishing products.

Suggested Text Books & References:

1. Draping for fashion design: Nurie Relis/ Hilde Jaffe, Reston publishing co.
2. Designs cutting and draping for special occasion clothes : for evening wear and party Wear, Drawn Cloak, Chryssalis
3. Anita Louise Crane, The pattern companion Sewing, Sterling Publishing Co., New York
4. N.Gokarneshan, Fabric structure and design, New Age Publishers.
5. Groscicki Z J, "Watson Textile Design and Colour", Newnes Buttersworth.
6. Diamond Ellen and Diamond Jay, Fashion Apparel & Accessories and Home Furnishing, Pearsons Prentice Hall, NJ, 2007.

Note:

All the experiments have to be performed by the students. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject. Electronic gadgets including cellular phones are not allowed in the examination.

PCC-FTP – 413A APPLICATION OF COMPUTER SOFTWARE FOR GARMENT MANUFACTURING

L T P
0 0 2

Total Credit: 1.0

Course Objectives:

The students will be able to:

- Understand the importance, objectives and fundamentals of CAD Designing.
- Introduce and give hands on training on computer softwares related to designing, patern making, grading and marker planning.
- Know fabric consumption at the time of marker planning.
- Understand and application of tools and software packages related to the topic and industrial uses.

Introduction to CAD software Introduction to garment production softwares, Pattern design through computer. Illustration, demonstration and practice of various garment softwares in Continuation to computer module for garment manufacturing.

1. Computerized Apparel Design: Introduction to "Basics of Computer Aided Design for Apparel Design". Usage of different drawing and measuring tools.
2. Designing the following garments with their flat sketches and color board:- Office Wear, Casual Wear, Party Wear, Street Wear
3. Basic Block construction and digitization of patterns. Pattern making of different garments, e.g. skirts, Basic bodice block. basic sleeve block etc. through assembly of lines, points, derived pieces, fold etc.
4. Introduction to Grading techniques. Grade the above patterns. Application of grading system to basic blocks and adaptations. Computerized grading on Lectra , RichPeace, etc design and grading system.
5. Introduction to the plotting methods and techniques. Introduction to body graphics and measurement software's. and their practice on available relevant software's in the lab.
6. Practice on Lectra (Modaris, Diamino), RichPeace fashion, Reach cadd Optitex, Tuka tech etc available relevant software's Extensive practice of RichPeace fashion cadd., Diamino and Kaledo Style, knit, weave, print, etc available relevant software's
7. Hand on practice on similar available software in the computer lab. Introduction to Marker planning and marker making for different garments for maximum fabric utilization.

Illustration, demonstration and practice of various garment softwares in Continuation to Computer Module for Garment Manufacturing. Extensive practice of print, etc softwares for garments and textile applications

Suggested Text Books & References:

1. Kitty G.Dickerson, Inside the Fashion Bussiness, 7th Edition, Pearson Education, India.

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2. G S Fringes, "Fashion from Concept to Consumer", Pearson 7th Edition.
3. H J Armstrong,"Pattern-making for Fashion Design", Pearson 4th Edition.
4. "Introduction to Fashion Design".
5. Software Modaris, Lectra.
6. Software Diamino, Lectra.
7. Software Vigiprint, Lectra.

Course Outcomes:
After completion of the course, students will be able to:
- Implement the importance, objectives and fundamentals of CAD Designing.
- Perform proper designing and pattern making techniques through softwears.
- Evaluate innovative knowledge of advanced garment illustration softwares applicable in industrial uses.
- Optimize fabric consumption at the time of marker planning.
- CADD helps to provide improved process capabilities and shorter product development lead time. It's a user-friendly, multipurpose software that can save a lot of your time.
- Develop analytical skills which helps to optimizing fabric consumption at the time of marker planning.

NOTE: Number of experiments may vary as per availability of softwares/ resources.

PSI-IPT -411A   INDUSTRIAL PRACTICAL TRAINING-

L T P   **Total Credit: 3**

0 0 0

Course Objectives:
The students will be able to:
- Understand the procedures and practices being followed in Garment Industries.
- Understand the logic and principles of how the fashion brands work and how they perform their marketing startegies.
- Understand the various departmental working and coordination between the various departments.

Industrial training was conducted after sixth semester of four to six weeks in which student were supposed to carry out extensive practical training. Students are required to present their knowledge acquired during training and supplement with various samples of apparels, fabrics, yarn, accessories, etc. However, assessment of the same will be carried out by faculty members.

Course Outcomes:
After completion of the course, students will be able to:
- Develop and anayse the brand starrgies in apparels
- Analyse the working of various departments of an export House.
- Analyse the functioning of various machines and tools operative in a Garment Manufacturing Unit.

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PSI-FTP -411A   **MINOR PROJECT**

L T P   Total Credit: 3

0   0   3

Course Objectives:

The students will be able to:

- To develop creative as well as technical skill to formulate or develop some product via a the below mention sequence:-

1. Identify the topic as per the interest area
2. Discuss the topic related work with the mentor
3. Develop the synopsis and present in front of the faculty borad
4. Develop the designs/ collectios/samples as per the topic selected.
5 showcase the final product/results in a detailed format.

Students have to carry out extensive literature survey, compile text material and pursue project on any specific topic assigned to him. The minor project may be also an initial part or literature survey of major project coming in next semester. It is expected from the students that they will utilise assigned hours in library, laboratory or industry as per the requirement of the project. Evaluation of minor project will be carried out by faculty members.

Course Outcomes:

After completion of the course, students will be able to:

- Perform design presentations.
- Develop Practical skills releted to garment construction and designing.

SYLLABUS –EIGHT SEMESTER

PROFESSIONAL ELECTIVE

PEC-FTL-402A   **SUSTAINABLE FASHION**

L T P   Total Credit: 3

3 0 0

Course Objectives:

The students will be able to:
- Familiar with need as well as concept of sustainable fashion.
- Acquaint with ecological standards prevailing globally.
- Gain knowledge on eco-friendly raw materials for eco-fashion.
- Get aware about brands and designers actively associated with sustainable fashion.
- Understand recycling and up-cycling technologies.

Unit 1

Introduction and concept of Sustainable fashion, Sustainable fashion terminologies- Eco , Sustainable, Ethical, Vegan, Craft/ artisan, Eco green, carbon footprint, water footprint, Eco initiatives- types. Popularity of eco fashion, The rise of conscious consumerism

Unit 2

Attributes of sustainable fashion, Eco fashion labels- Definition, Origin, Need and Scope of eco label, Benefits of eco label, Eco labeling schemes, Types of eco label and products covered. Certification terminologies- Fair trade, Global organic textile standard, OEKO-TEX standard 100, European eco label for textile product.

Unit 3

Eco fibers and fabrics – Organic cotton, Hemp, Bamboo, Linen, Organic wool, Ahimsa silk, Soy silk. Eco-mark- Definition, Types of eco mark for fabrics: Silk mark, Handloom mark.

Unit 4

Textile waste and Up-cycling - Three R's of recycling- Reduce, Reuse, Recycle. Methods of recycling technologies and repurposing of used clothing, fashion brands that use recycled textile materials, Designers and brands actively associated with sustainable fashion.

Suggested text books & references:

1. Eco Textiles the Way Forward for Sustainable Development in Textiles, Wood head publications, London.
2. Subramanian Senthilkannan Muthu ,(2018). Sustainable Innovations in Textile Fibers, Springer publications, Singapore.
3. Thomas and Hudson, (2012). The Sustainable Fashion Handbook, Sandy Black publishers, London.
4. Jennifer Farley Gordon, Collean hill, (2014) Sustainable fashion: Past, Present and Future, Bloomsburry Publishing, London.

Course Outcomes:

After completion of the course, students will be able to:
- Appreciate and relate the importance of sustainable fashion in daily life.
- Apply the knowledge and skills in reducing carbon and water footprints in apparel industry.
- Evaluate and compare the impact of existing technologies and sustainable alternative in apparel production.
- Implement the sustainable practices in daily life and develop eco-conciouness.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE

PEC-FTL 404A   AUTOMATION IN APPAREL INDUSTRY

L T P   Total Credit: 3

3 0 0

Course Objectives:

The students will be able to:

- Learn the Concepts of automatic control.
- Familiarize with automation in sewing machines and apparel industries.
- Learn the Working and maintenance of Temperature, Pressure, Flow, Level and other measuring equipment.
- Gain knowledge of Automatic Controller along with calibration.
- Understand the different types of automation tool.

Unit 1

Definition of automation and its types, Need of automation in apparel industry, available Different automated systems in apparel industry. Introduction of high tech machinery for garment manufacturing and its contribution to higher quality and Productivity: Familiarization with cam controlled work places, Introduction to computerized numerical controlled (CNC) Tool. Challenges while implementing automation, advantages and disadvantages of automation

Unit 2

Different types of automation tools.Sewing machine parts, terminology, their shape and structure, function and combination. Machine control practice. Lubricating System, etc. Different Feed Mechanisms, their suitability for different fabrics and construction of components and their contribution towards quality and productivity.

Unit 3

Comparative analysis of computerized Button Sewing m/c, Button Feeder, Button hole, Transport rails, Button magazines, Clamp Feed, Bar Tack, Label Sewing m/c, Profile sewers , process control, Pocket welting m/c, Automatic Placket making m/c, Memory Bank, Programming, repositioning device, Needle Positioners, precise sewing, Sew control, etc.

Unit 4

Definition, features and general profile of Work aids/attachments and their application, Analysis of samples developed with and without attachments in terms of quality, time consumption, costs and overall performance, Positioning attachments, Folders, Hemmers, Metering Device, Cloth Pullers, Shirring device, Thread Trimmers, wipers, Chain Cutters, Photoelectric Sensors, pressure foot, etc. Emerging technologies in apparel construction like robotics and R.F.I.D, etc.

Suggested Text Books & References:

1. Berkstresser G.A., Buchanan and Grady, Automation in the textile industry from fibres to apparel, The Textile Institute, 1995.
2. Jacob Solinger., "Apparel Manufacturing Handbook ", VanNostrand Reinhold Company, 1980.
3. Nuerie Relis , Gail Strauss, "Sewing for Fashion Design", 2nd Ed, Prentice Hall
4. Sherie Doongaji, Deshpande, "Basic Processes and Clothing Construction", New Raj Book Dep, New Delhi.

Course Outcomes:

After completion of the course, students will be able to:

- Identify the fundamentals of automation in apparel industry.
- Analysis the samples developed with and without attachments in terms of quality, time consumption, costs and overall performance.
- Explain industrial terminology and operate equipment in appropriate way.
- Analyse the stitching techniques, stitches, machine and production processes.
- Implement the concept and types of automation.
- Assess the degree and level of automation.
- Use various components of automation like sensors, actuators, PLC.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE
PEC-FTL -406A   SMART TEXTILES

L T P   Total   Credit: 3
3 0 0

Course Objectives:

The students will be able to:

- Gain understanding about properties and uses of speciality fibres
- Know about various functional garments, their requirements and applications.
- Have understanding about principle and mechanisms of smart garments.
- Gain adequate knowledge about medical textile, sportswear, defence textiles etc

Unit 1

Functional garments; definition and different types, brief idea about properties and uses of speciality fibres like Nomex, Kevlar, Glass fibre and other fibres used in functional garments. Sportswear ; Requirement, different fibres used, approaches for manufacture.
Breathable apparels; Introduction, principle, classification and use. Moisture management fabric.

Unit 2

Protective clothing; General requirement of protective clothing, chemical protective clothing (CPC) and their applications. Functional requirements of defence clothing.

Unit 3

Antimicrobial clothing, their importance and applications. Thermal protective clothing; combustion mechanism, fire governing parameters, requirements, construction, various parameters affecting flame retardency, performance evaluation.

Unit 4

Ballistic Protective clothing: Requirements, principle of mechanism, different fibres and fabrics, Medical Responsive Fabrics; Definition, requirements, fibres, classification, Smart Electronic clothing and requirements.

Suggested Text Books & References:

1 Horrocks A R and Anand S C , Handbook of Technical Textiles, Woodhead Publication Ltd, Cambridge, 2000

2 Sarah. E Braddock and Marie O "Mahony" Techno textiles – Revolutionary fabrics for fashion & design" Thames & Hudson

3 Sabit Adanaur, "Wellington Sears Handbook of Industrial Textiles", Technimic Publishing company, Inc., Pennsylavania, U.S.A

Course Outcomes:

After completion of the course, students will be able to:

- Apply their knowledge of high performance fibre properties in smart textiles.
- Evaluate the influence of fibre and yarn parameters on Functional garments.
- Develop skills to design and develop functional clothing for various end use applications like sports wear, protective clothing, medical textiles etc.
- Develop insight into innovative electronic wear and other quality smart textile products.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PROFESSIONAL ELECTIVE

PEC-FTL-408A   **APPAREL EXPORT AND BUSINESS ENVIRONMENT**
L T P
3 0 0   Total Credit:3

Course Objectives:

The students will be able to:

- Familiarise students with the export Documentation process.
- Create understanding about the Determinants of Indian Business Environment.
- Familiarise students with different types of Credits and their role in Business
- Create understanding about various Economic Reforms.
- Familiarise with Public enterprise reforms and Disinvestments programmes.

Unit 1

Introduction to export process, objectives, terminologies. Current scenario of Indian apparel industry, globalization and its effect. \

Unit 2

Documentation-principle documents, auxiliary documents, documents for claiming export assistance. Nature, Components and Determinants of Indian Business environment. General concept: GNP, GDP, BOT, BOP, Fiscal Policy, Monetary Policy, Fiscal Deficit, risk coverage, insurance and buyer-exporter incentives, etc.

Unit 3

Export credit short, medium & long term export credits, role of terms of payment in international trading.Quality control and pre-shipment inspection, clearance of cargo and customs export clearance. New economic policy, EXIM Policy,Economic Reforms – Liberalization, Privatization, Globalization.

Unit 4

Public enterprise reforms and Disinvestments programmes. WTO – Genesis, Agreement, Rounds, Impact on Indian Business Environment, reforms in context to Indian Business. National textile policy and Role of BIFR.

Suggested Text Books & References:

1. Mishra & Puri, Economic Environment of Business, Himalaya Publishing House, Mumbai
2. Francis Cherunilam, Business Environment, Himalaya Publishing House, Mumbai, 2007.
3. John Graham, Mary C. Gilly, Philip R. Cateora, International Marketing, Mc Graw Hill, 2008.
4. Sak Onkvisit and John J. Shaw, "International Marketing", Routledge, 2004
5. Jain T R, Mukesh Trehan and Ranju Trehan, Indian Economy, V K Publications

Course Outcomes:

After the completion of course, the students will be able to:

- Implement the export documentation process.
- Analyse the Determinants of Indian Business Environment.
- Use about different types of Credits and their role in Business
- Implement about various Economic Reforms
- Analyse the enterprise reforms and Disinvestments programmes

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3 Electronic gadgets including cellular phones are not allowed in the examination.

4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

OPEN ELECTIVE

OE- FTL-402A   ENTREPRENEURSHIP DEVELOPMENT

L T P   Total Credit: 3

3 0 0

Course Objectives:

The students will be able to:

- Study various entrepreneurship skills among the students.
- Understand, appreciate and develop skills for embarking on self-employment / entrepreneurship.
- Understand the procedure involved in launching an enterprise and issues involved in the same.

Unit 1

Entrepreneurship Development – Concept ,meaning and definitions of entreneurship, nature and characteristics of entrepreneurship; importance and benefits of entrepreneurship, types of entrepreneur, function of Enterpriser, motivational factors of entrepreneurship.Goal determination – Problems Challenges and solutions.

Unit 2

Business planning-Starting a new venture related to apparel industry, essentials of a successful center:- Need and Objects, Nature of organization. Production Management:- Activities of Production Management, Advantages ,Production planning. Financial Management:- Meaning of Financial Management , Objectives ,Functions Scope/Elements, Financial Institutions ,Financial Plans. Marketing Management, Consumer Management. Project Appraisal:- Objectives of Project Appraisal, major criteria in project appraisal.

Unit 3

Industrial sickness and remedies, tax planning, VAT, Patent Rules, Factory Act, Minimum wages, knowledge of exemptions & deductions. Dimensions of Entrepreneurship :- Entrepreneurial Culture , Entrepreneurial Society , Women Entrepreneurship , Rural Entrepreneurship. Role of Regulatory Institutions; Role of Development Organizations; Self Employment Oriented Schemes; Various grant schemes.

Unit 4

Entrepreneurship in the fashion industry, challenges of a fashion entrepreneur :- Specific industry challenges, Personal challenges, supportive concepts of fashion entrepreneurship, Innovation intelligence and entrepreneurship in the fashion industry, role of entrepreneurs in development of apparel and fashion industry

Suggested Text Books & References:

1.   Raja Gopal, entrepreneurship & Rural markets
2.   H.B.S press, Harward Business Review on Entrepreneurship, Harward business review, USA
3.   Michele Gananagar, Fashion Entrepreneurship Retail Business planning.
4.   Harrell. W.For Entrepreneurs only, Career Publishing
5.   Jain GR &Gupta D, New Initiatives in Entrepreneurship Education & Training

Course Outcomes:

After completion of the course, students will be able to:

- Evaluate and analyze the various Personal and industrial challenges in fashion industry and develop entrepreneur skills to overcome constraints..
- Develop the skills of systematic planning and managing a business enterprise

- Develop and strengthen entrepreneurial quality and motivation.
- Analyze the challenges of a fashion entrepreneur in different ares.

Note:

1 Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.

2 The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

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4 There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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Department of Fashion Technology
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OPEN ELECTIVE
OE- FTL-404A   ECONOMIC POLICIES OF INDIA
L T P   Total   Credit: 3
3 0 0

Course Objective:

The students will be able to:

- Learn the fundamentals of Indian and world economy.
- Understand the basic issues in Indian economy.
- Impart fundamental economic principles that can assist engineers to make more efficient and economical decisions.
- Understand the Nature and characteristics of Indian and world economy.

Unit 1

Definition of Economics, Structure of Indian economy, characteristics of Indian economy; demographic features of Indian population; economic planning in India, Achievement and failure, problems of unemployment, poverty and income , inequality in India. Role of economics in Science, Engineering and Technology, circular flow of economic activity, the concept of equilibrium in economics, Money: theory and function of money.

Unit 2

Major economic policies in India: industrial policy, trade policy, monetary policy, fiscal policy, Indian agricultural policy, National agricultural policy, international trade policy, exchange rate management policy, EXIM policy. Economic liberalization in India, National economic police's in India.

Unit 3

Basics issues in Indian economy, Industrial development in India , industrial policy of 1948,1956 and 1991.New Economics policy; Liberalization , privatization , Globalization and foreign Direct investment ,Latest monetary and fiscal policy in India.

Unit 4

Nature and characteristics of Indian economy, Economics reforms in India, national income concept, Privatization - meaning, merits and demerits, Balance of payment, Globalization of Indian economy - merits and demerits. Meaning and functions of commercial banks and central banks, concept of goods and services tax (GST). Elementary Concepts of VAT, WTO, GATT & TRIPS agreement, IMF, World Bank, Nature and scope and public finance, Growth and structure of public debt. Role of textile industry in Indian economy.

Suggested Text Books & References

1. A Text Book of Economic Theory Stonier and Hague (Longman's Landon).
2. Micro Economic Theory– M.L. Jhingan (S.Chand).
3. Micro Economic Theory- H.L. Ahuja (S.Chand).
4. Modern Micro Economics: S.K. Mishra (Pragati Publications).
5. Economic Theory- A.B.N. Kulkarni & A.B. Kalkundrikar (R. Chand & Co.).
6. Modern Economic Theory– K.K. Dewett (S.Chand).
7. Indian Economy-Mishra & Puri
8. Principles of Economics: P.N. Chopra (Kalyani Publishers)

Course Outcomes:

After completion of the course, students will be able to:

- Analyse the economic reforms in India.
- Apply economic policy concepts tools and techniques in evaluating business decisions taken by a firm.
- Analyse major economic policies in India.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

OPEN ELECTIVE

OE- FTL-406A   HUMAN RESOURCE MANAGEMENT AND IPR

L T P   Total Credit: 3

3 0 0

Course Objectives:

The students will be able to:

- Gain knowledge on managing Human Resource.
- Understand the work force at the managerial and non-managerial levels.
- Familiarize with new trends and skills required for Planning, managing and development of human resources for organizational effectiveness.
- Develop entrepreneurship skills in participants by preparing them for the competencies required and to have basic knowledge of intellectual property rights.
- Learn the concepts of Management, Entrepreneurship and Intellectual Property Rights (IPRs).

Unit 1

Concept of HRM, Difference between HRM and HRD, Personnel Management, Human resource planning, Job Analysis: Meaning and Importance; Processes of Job Analysis. Job Descriptions and Job Specifications, person analysis, Difference between Personnel management and HRM .

Unit 2

Role of HR Manager: Recruitments, selection, carrier planning and management, promotion, training and development, appraising performance, motivation and motivational theories, role of HRD in improving effectives of firm, work system ;work planning and role analysis, work review and feedback, potential appraisal ,360 degree appraisal, team appraisal.

Unit 3

Introduction to Intellectual property rights and their importance. Applications of IPR in textile and fashion industries. Copyright: definition, types of works that are covered by copyright, rights protected by copyrights-economic rights, moral rights. Right of reproduction:-right of public performance, broadcasting and communication to the public. Right of translation and adaptation.

Unit 4

Trademarks: introduction, signs that may serve as trademarks, Madrid agreement, geographic indications. Industrial design: introduction, differentiate between industrial design, trademark and patent. Procedure for protection of Industrial design. Patents: purpose, need of patent, required condition for patentability. Limitation and advantages of patenting. Unfair competition.

Suggested Text Books & References

1. Holloway, J. Ed. Performance Measurement and Evaluation, New Delhi, Sage, 1995.
2. Stone, Lloyed and Leslie W. Rue, Human Resource an Personnel Management, Richard D. Trwin, Illinois, 1984
3. Aswathappa, K., Human Resource and Personnel Management, Tata Mc Graw Hill, New Delhi, 1997.

Course Outcomes:

After completion of the course, students will be able to:

- Apply managerial skills for success of entrepreneurial/business venture and fundamentals of human resource management.
- Analyse the use and types of intellectual property rights.
- Evaluate obstacles to change management and make suitable strategy to remove them.
- Analyse the stepped and radical changes in the organization.
- Develop and manage new project/Start-up. .

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

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OPEN ELECTIVE

OE-FTL-408A
PROFESSIONAL ETHICS AND HUMAN VALUES

L T P
3 0 0

Total Credit: 3

Course Objective:

The students will be able to:

- Understand the imbibe ethical values and understanding.
- Learn the professional ethics and human values in present competitive business environment and competition.
- Understand the fundamentals of professional and students ethics.

Unit 1

Professional ethics , Students Ethics , Human Values: Morals, values and ethics - integrity - work ethic - service learning - civic virtue - respect for others - living peacefully - caring - sharing - honesty - courage - valuing time - cooperation - commitment - empathy - self-confidence - character – spirituality, code of conduct.

Unit 2

Engineering Ethics: Senses of 'engineering ethics' - variety of moral issued - types of inquiry - moral dilemmas -moral autonomy - consensus and controversy – models of professional roles - theories about right action - Self-interest customs and religion - uses of ethical theories

Unit 3

Engineering as social experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics – a balanced outlook on law - the challenger case study. Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk

Unit 4

Safety, Responsibilities And Rights: Collegiality and loyalty - respect for authority - collective bargaining - confidentiality -conflicts of interest - occupational crime - professional rights - employee rights – intellectual property rights (IPR) – discrimination Global Issues: Multinational corporations - environmental ethics - computer ethics - weapons development - engineers as managers - consulting engineers-engineers as expert witnesses and advisors - moral leadership - sample code of ethics

Suggested Text Books & References

1. Mike Martin and Roland Schinzinger, Ethics in Engineering, McGraw-Hill, New York 1996

2. Govindarajan M., Natarajan S., and Senthil Kumar V. S., Engineering Ethics, Prentice Hall of India, New Delhi, 2004

3. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, Engineering Ethics – Concepts and Cases, Wadsworth Thompson Learning, United States, 2000 (Indian Reprint)

4. John R Boatright, Ethics and the Conduct of Business, Pearson Education, Fifth Edition New Delhi, 2003

5. Edmund G. Seebauer and Robert L. Barry, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press, Oxford, 2001

6. Charles B. Fleddermann, Engineering Ethics, Pearson Education / Prentice Hall, New Jersey, 2004

Course Outcomes:

After completion of the course, students will be able to:

- Analyse the Safety and risk - assessment in professional environment.
- Develop the moral thinking that will help students to recognize their potential.
- Apply the professional ethics and human values in present competitive business environment and competition.
- Create the ethical decision making ability in their personal and professional life
- Learn the human values, moral values and work ethics.
- Develop ethical decision making ability in their personal and professional life.

Note:

1. Minimum passing marks for any subject (paper) shall be 40% in the external examination and 40 % in the aggregate of internal and external examinations of that subject.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic gadgets including cellular phones are not allowed in the examination.
4. There will be nine questions in total from all four units. First question is compulsory and set from all four units. Students will have to attempt any five questions in all selecting at least one question from each unit.

PCC-FTP-412A   **ADVANCE APPAREL CONSTRUCTION WITH FASHION ACCESSORIES LAB**

L T P
0 0 2   Total Credit: 1.0

Course objectives:

Students will be able to;

- Design different accessories.
- To develop the skill of designing fashionable men/women/children wear along with accessories.

List of experiments: Designing of

- Bags
- Belts
- Ties
- Caps and hats
- Shoe
- Jewelry

Pattern making and construction:

- Construction and Pattern Development of designer replica of kid's wear.
- Construction and Pattern Development of designer replica of Indian women's wear (Lehenga / Gaghra Choli)
- Construction and Pattern Development of designer replica of Indian men's wear
- Making of fashion garments with their accessories for children/men/women (any 5 design by using a theme) along with accessories.

Presentation/exhibition of garments with accessories prepared in advance apparel construction lab I or II by the students on mannequins or in terms of fashion shows.

Suggested Text Books & References:

1. Armstrong, Pattern Making for Fashion Design, Dorling Kindersley publication.
2. Aldrich, Metric Pattern Cutting Men's wear 4th Ed., Blackwell publication.
3. Aldrich, Metric Pattern Cutting for Children wear & baby wear, Blackwell publication.
4. Aldrich, Pattern Cutting for Women tailored Jacket, Blackwell publication.
5. Holman, Pattern Cutting Made Easy, Batsford publication.
6. Cooklin, Pattern Grading Men's cloth, Blackwell publication.
7. Cooklin, Pattern Grading Women's cloth, Blackwell publication.

Course Outcomes:

At the end of the course, students will be able to:

- Design different type of accessories.
- Construct the different types of garment patterns of kids, women and men
- Make different type of fashion accessories.
- Present their designs with accessories.

Note: At least ten experiments have to be performed in the semester out of which seven experiments should be performed from above mentioned list. Remaining three experiments may either be performed from the above mentioned list or designed/set by the teacher as per the scope of the syllabus.

PSI-FTP-412A   **MAJOR PROJECT**

L T P

0 0 4   **Total Credit: 4**

Course Objectives:

The students will be able to:

- Develop design and making of different types of products as per the instruction of respected guides.
- Develop creative as well as technical skill to formulate or develop some product via a the below mention sequence:-

1. Identify the topic as per the interest area
2. Discuss the topic related work with the mentor
3. Develop the synopsis and present in front of the faculty borad
4. Develop the designs/ collectios/samples as per the topic selected.
5 Showcase the final product/results in a detailed format.

Students have to carry out literature survey, compile text material and pursue project on any specific topic assigned to him. It is expected from the students that they will utilised allotted hours/ week in library, laboratory or industry as per the requirement of the project. In case of industrial project, student may spend required time in industry in consultation with faculty/ supervisor. Students have to give their presentation in front of board of panel.

Course Outcomes:

After completion of the course, students will be able to:

- Perform design presentations.
- Develop Practical skills releted to garment construction and designing.

PSI-FTP-414A ART PORTFOLIO WITH PRESENTATION

L T P
0 0 4

Total Credit: 4

Course Objectives:-

- To impart practical skills for portfolio presentations.
- Knowledge of making the design of the garments and flat Sketch.
- Students will be able to understand the Design concept of Fashion and apparel Industry.
- To develop the skill of designing fashionable men/women/children wear along with the theme.

The student will study the particular topic in consultation with the faculty. Student has to present her study, work and submit reports in stipulated time. Assessment in terms of presentation will be carried out via an internal board of faculties.

Develop a collection on any one of the categories
1. Women
2. Mens
3. Kids

Portfolio development and presentation technique:-

- To be a planned for a season or occasion.
- Mood board, Story board, Fabric board, color board (To be presented separately or in a combined form)
- Fabric development chart (Swatch Board)
- Design, development chart
- Flats and specification
- Cost sheet
- Spec sheet
- Final presentation.
- Number of garments in a collection 4-6 garments.

Development of garments by drafting, draping and Flat Pattern.

Produce one collection from the portfolio and to be presented as fashion show.

Suggested Text Books & References

1. Campbell, D et. Al (2001) : How to develop a professional portfolio : Allyn& Bacon by Waterier, John W.

2. Aspelund Karl ,2010, Design Process, Fairchild Publication

3. Seivewright Simon 2012, Basics Fashion Design -Research and Design,Bloomsbury Publication India.

Course Outcomes:

After completion of the course, students will be able to:

- Make portfolio presentations.
- Develop Practical skills to related to garment designing.
- Make Design of different garment patterns and construction.