ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
REGULATIONS 2017
B. TECH. FASHION TECHNOLOGY
CHOICE BASED CREDIT SYSTEM

1. Programme Educational Objectives (PEOs)

Bachelor of Fashion Technology curriculum is designed to prepare the graduates having attitude and knowledge to

a) Have powerful base to pursue a successful professional and technical career
b) Have strong foundation in basic sciences, mathematics, engineering and experimentation skills to comprehend the manufacturing processes and provide practical and innovative solutions.
c) Have knowledge on the theory and practices in the field of fashion technology and allied areas to manage apparel industry and provide techno-economic solutions to the problems.
d) Engross in life-long learning to keep abreast with emerging technology
e) Practice and inspire high ethical values and maintain high technical standards

2. Programme Outcomes (POs)

1. Ability to apply knowledge of mathematics, science and engineering in Apparel design and production processes.
2. Ability to apply knowledge on basics of fiber, yarn, fabric manufacture, chemical processing and testing of textiles in the field of garment production.
3. Ability to understand and apply basic pattern engineering concepts, garment construction, merchandising and marketing, sewing, woven and knitted fabric design skills in the industry.
4. Ability to identify and solve technological problems in garment industry
5. Ability to analyze and apply knowledge in the field of design and production of apparels using computational platforms and software tools.
6. Commitment to implement the professional and ethical values.
7. Use the modern tools, techniques and skills necessary for practicing in the apparel design manufacturing industry.
8. Ability to communicate effectively and work in interdisciplinary groups.
9. Ability to review, comprehend and report technological development.

3. Mapping of PEOs with POs

PEOs	POs								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
a	√	√	√	√	√			√	
b	√				√	√	√		√
c		√	√	√	√		√		√
d				√	√		√	√	√
e						√		√	

4. Semester Course wise POs Mapping

		Course Title	1	2	3	4	5	6	7	8	9
Year I	SEMESTER I	Communicative English						√		√	√
		Engineering Mathematics I	√				√		√		√
		Engineering Physics	√			√					
		Engineering Chemistry	√	√		√					
		Problem Solving and Python Programming	√				√		√		√
		Engineering Graphics			√		√		√		√
		Problem Solving and Python Programming Laboratory			√		√		√		√
		Physics and Chemistry Laboratory	√	√		√					
	SEMESTER II	Technical English						√		√	√
		Engineering Mathematics II	√				√		√		√
		Chemistry for Technologists	√	√		√					
		Basics of Electrical and Electronics Engineering	√		√				√		√
		Basics of Textile Technology		√	√	√					
		Concepts of Fashion and Design		√	√	√	√	√			
		Engineering Practices Laboratory	√		√	√					
		Applied Chemistry Laboratory	√	√		√					
Year II	SEMESTER III	Probability and Statistics	√				√		√		√
		Technology of Spinning Processes		√	√	√					
		Characteristics of Textile Fibres		√		√					
		Pattern Engineering I		√	√	√	√		√		
		Fundamentals of Garment Manufacturing		√	√	√	√		√		
		Fashion Evolution		√	√				√		
		Basic Electrical and Electronics Engineering Laboratory	√		√				√		
		Fashion Illustration Laboratory		√	√						
		Pattern Engineering Laboratory I		√	√	√	√		√		
		Interpersonal Skills/Listening and Speaking						√		√	√
	SEMESTER IV	Textile Chemical Processing		√		√			√		
		Pattern Engineering II		√	√	√	√		√		
		Engineering Mechanics for Textile Technologists	√			√					√
		Garment Production Machinery		√	√	√			√		
		Fabric Manufacturing		√	√	√					
		Garment Construction I			√	√	√				
		Pattern Engineering Laboratory II		√	√	√	√				
		Garment Construction Laboratory I			√	√	√				
		Advanced Reading and Writing						√		√	√

Year III	SEMESTER V	Garment Construction II			√	√	√					
		Knit Fabric Production		√	√	√						
		Environmental Science and Engineering	√	√				√				
		Professional Communication										
		Textile Chemical processing Laboratory		√		√						
		Garment Construction Laboratory II			√	√	√					
		Fabric Analysis Laboratory		√	√	√						
	SEMESTER VI	Industrial Engineering in Apparel Industry		√	√	√	√	√	√			
		Textile Quality Evaluation		√	√	√		√				
		Apparel Production Planning and Process Control			√	√			√			
		Apparel Marketing and Merchandising			√	√		√		√	√	
		Woven Fabric Structures		√	√	√						
		Fashion Design Laboratory			√	√	√					
		Textile Quality Evaluation Laboratory		√	√	√						
		Garment Machinery Laboratory		√	√	√						
Year IV	SEMESTER VII	Apparel Costing			√			√		√	√	
		Garment Finishing and Clothing Care		√		√						
		Garment Accessories and Embellishments			√	√			√			
		Computer Aided Garment Design Laboratory			√	√	√		√			
		Internship				√		√	√	√	√	
	SEMESTER VIII											
		Project Work		√	√	√		√	√	√	√	

ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
REGULATIONS 2017
B. TECH. FASHION TECHNOLOGY
CHOICE BASED CREDIT SYSTEM
I TO VIII SEMESTERS (FULL TIME) CURRICULA AND SYLLABI

SEMESTER I

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	HS8151	Communicative English	HS	4	4	0	0	4
2	MA8151	Engineering Mathematics - I	BS	4	4	0	0	4
3	PH8151	Engineering Physics	BS	3	3	0	0	3
4	CY8151	Engineering Chemistry	BS	3	3	0	0	3
5	GE8151	Problem Solving and Python Programming	ES	3	3	0	0	3
6	GE8152	Engineering Graphics	ES	6	2	0	4	4
PRACTICALS								
7	GE8161	Problem Solving and Python Programming Laboratory	ES	4	0	0	4	2
8	BS8161	Physics and Chemistry Laboratory	BS	4	0	0	4	2
			TOTAL	**31**	**19**	**0**	**12**	**25**

SEMESTER II

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	HS8251	Technical English	HS	4	4	0	0	4
2	MA8251	Engineering Mathematics - II	BS	4	4	0	0	4
3	CY8292	Chemistry for Technologists	BS	3	3	0	0	3
4	BE8251	Basic Electrical and Electronics Engineering	ES	3	3	0	0	3
5	TT8251	Basics of Textile Technology	PC	3	3	0	0	3
6	FT8201	Concepts of Fashion and Design	PC	2	2	0	0	2
PRACTICALS								
7	GE8261	Engineering Practices Laboratory	ES	4	0	0	4	2
8	CY8261	Applied Chemistry Laboratory	BS	4	0	0	4	2
			TOTAL	**27**	**19**	**0**	**8**	**23**

SEMESTER III

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	MA8391	Probability and Statistics	BS	4	4	0	0	4
2	FT8301	Technology of Spinning Processes	PC	3	3	0	0	3
3	TT8351	Characteristics of Textile Fibres	PC	4	4	0	0	4
4	FT8302	Pattern Engineering I	ES	3	3	0	0	3
5	FT8303	Fundamentals of Garment Manufacturing	PC	2	2	0	0	2
6	FT8304	Fashion Evolution	PC	3	3	0	0	3
PRACTICALS								
7	EE8362	Basic Electrical and Electronics Engineering Laboratory	ES	4	0	0	4	2
8	FT8311	Fashion Illustration Laboratory	PC	4	0	0	4	2
9	FT8312	Pattern Engineering Laboratory I	PC	4	0	0	4	2
10	HS8381	Interpersonal Skills / Listening and Speaking	EEC	2	0	0	2	1
			TOTAL	**33**	**19**	**0**	**14**	**26**

SEMESTER IV

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	FT8401	Textile Chemical Processing	PC	3	3	0	0	3
2	FT8402	Pattern Engineering II	PC	3	3	0	0	3
3	TT8391	Engineering Mechanics for Textile Technologists	ES	5	3	2	0	4
4	FT8403	Garment Production Machinery	PC	2	2	0	0	2
5	FT8491	Fabric Manufacturing	PC	3	3	0	0	3
6	FT8404	Garment Construction I	PC	3	3	0	0	3
PRACTICALS								
7	FT8411	Pattern Engineering Laboratory II	PC	4	0	0	4	2
8	FT8412	Garment Construction Laboratory I	PC	4	0	0	4	2
9	HS8461	Advanced Reading and Writing	EEC	2	0	0	2	1
			TOTAL	**29**	**17**	**2**	**10**	**23**

Note: Internship for a duration of two weeks during the Semester summer vacation should be undergone by the students for which assessment will be done during VII semester.

SEMESTER V

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	FT8501	Garment Construction II	PC	3	3	0	0	3
2.	FT8502	Knit Fabric Production	PC	2	2	0	0	2
3.	GE8291	Environmental Science and Engineering	HS	3	3	0	0	3
4.		Professional Elective I	PE	3	3	0	0	3
5.		Professional Elective II	PE	3	3	0	0	3
6.		Open Elective I*	OE	3	3	0	0	3
PRACTICALS								
7.	TT8681	Textile Chemical Processing Laboratory	PC	4	0	0	4	2
8.	FT8511	Garment Construction Laboratory II	PC	4	0	0	4	2
9.	TT8561	Fabric Analysis Laboratory	PC	4	0	0	4	2
10.	HS8581	Professional Communication	EEC	2	0	0	2	1
			TOTAL	**31**	**17**	**0**	**14**	**24**

* - Course from the curriculum of the other UG Programmes

SEMESTER VI

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	FT8652	Industrial Engineering in Apparel Industry	PC	3	3	0	0	3
2	FT8691	Textile Quality Evaluation	PC	3	3	0	0	3
3	FT8601	Apparel Production Planning and Process Control	PC	3	3	0	0	3
4	FT8651	Apparel Marketing and Merchandising	PC	3	3	0	0	3
5	TT8591	Woven Fabric Structures	PC	3	3	0	0	3
6		Professional Elective III	PE	3	3	0	0	3
PRACTICALS								
7	FT8611	Fashion Design Laboratory	PC	4	0	0	4	2
8	FT8661	Textile Quality Evaluation Laboratory	PC	4	0	0	4	2
9	FT8612	Garment Machinery Laboratory	PC	2	0	0	2	1
			TOTAL	**28**	**18**	**0**	**10**	**23**

Note: Internship for a duration of four weeks during the Semester summer vacation should be undergone by the students for which assessment will be done during VII semester.

SEMESTER VII

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	FT8701	Apparel Costing	PC	3	3	0	0	3
2	FT8702	Garment Finishing and Clothing Care	PC	3	3	0	0	3
3	FT8703	Garment Accessories and Embellishments	PC	3	3	0	0	3
4		Professional Elective IV	PE	3	3	0	0	3
5		Open Elective II*	OE	3	3	0	0	3
PRACTICALS								
6	FT8711	Computer Aided Garment Design Laboratory	PC	4	0	0	4	2
7	FT8712	Internship**	EEC	0	0	0	0	2
			TOTAL	**19**	**15**	**0**	**4**	**19**

* Course from the curriculum of the other UG Programmes

** - vide IV semester and VI semester

SEMESTER VIII

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1		Professional Elective V	PE	3	3	0	0	3
2		Professional Elective VI	PE	3	3	0	0	3
PRACTICALS								
3	FT8811	Project Work	EEC	20	0	0	20	10
			TOTAL	**26**	**6**	**0**	**20**	**16**

TOTAL CREDITS: 179

PROFESSIONAL ELECTIVES (PE)

PROFESSIONAL ELECTIVE I, SEMESTER V

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	FT8001	Computer Application in Apparel Industry	PE	3	3	0	0	3
2.	FT8002	Knit Wear Development	PE	3	3	0	0	3
3.	FT8003	Application of ERP and MIS in Apparel Industry	PE	3	3	0	0	3
4.	TT8092	Denim Manufacturing	PE	3	3	0	0	3
5.	GE8071	Disaster Management	PE	3	3	0	0	3

PROFESSIONAL ELECTIVE II, SEMESTER V

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	FT8004	Quality Assurance in Fabric and Garment Production	PE	3	3	0	0	3
2.	FT8005	Fashion Photography	PE	3	3	0	0	3
3.	FT8006	Fashion Management	PE	3	3	0	0	3
4.	FT8007	Protective Garments	PE	3	3	0	0	3

PROFESSIONAL ELECTIVE III, SEMESTER VI

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	FT8008	Apparel Size and Fit analysis	PE	3	3	0	0	3
2.	TT8791	Operations Research in Textile Industry	PE	3	3	0	0	3
3.	FT8009	Intimate Apparel	PE	3	3	0	0	3
4.	GE8075	Intellectual Property Rights	PE	3	3	0	0	3
5.	GE8076	Professional Ethics in Engineering	PE	3	3	0	0	3

PROFESSIONAL ELECTIVE IV, SEMESTER VII

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	FT8072	Retail Management and Visual Merchandising	PE	3	3	0	0	3
2.	TT8091	Clothing Comfort	PE	3	3	0	0	3
3.	FT8010	Textile and Apparel EXIM Management	PE	3	3	0	0	3
4.	GE8077	Total Quality Management	PE	3	3	0	0	3
5.	TT8078	Production and Application of Sewing Threads	PE	3	3	0	0	3
6.	TT8076	Home Textiles	PE	3	3	0	0	3
7.	GE8074	Human Rights	PE	3	3	0	0	3

PROFESSIONAL ELECTIVE V, SEMESTER VIII

S. No.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	FT8011	Apparel Entrepreneurship	PE	3	3	0	0	3
2.	TT 8851	Bonded Fabrics	PE	3	3	0	0	3
3.	GE8073	Fundamentals of Nanoscience	PE	3	3	0	0	3
4.	FT8012	Fabric Souring and Sampling	PE	3	3	0	0	3

PROFESSIONAL ELECTIVE VI, SEMESTER VIII

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	MG8791	Supply Chain Management	PE	3	3	0	0	3
2.	FT8013	Fashion Forecasting	PE	3	3	0	0	3
3.	FT8014	Fashion Portfolio Development	PE	3	3	0	0	3
4.	FT8071	Brand Management	PE	3	3	0	0	3

SUBJECT AREAWISE DETAILS

HUMANITIES AND SOCIAL SCIENCES (HS)

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	HS8151	Communicative English	HS	4	4	0	0	4
2.	HS8251	Technical English	HS	4	4	0	0	4
3.	GE8291	Environmental Science and Engineering	HS	3	3	0	0	3

BASIC SCIENCES (BS)

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	MA8151	Engineering Mathematics I	BS	4	4	0	0	4
2.	PH8151	Engineering Physics	BS	3	3	0	0	3
3.	CY8151	Engineering Chemistry	BS	3	3	0	0	3
4.	BS8161	Physics and Chemistry Laboratory	BS	4	0	0	4	2
5.	MA8251	Engineering Mathematics II	BS	4	4	0	0	4
6.	CY8292	Chemistry for Technologists	BS	3	3	0	0	3
7.	CY8261	Applied Chemistry Laboratory	BS	4	0	0	4	2
8.	MA8391	Probability and Statistics	BS	4	4	0	0	4

ENGINEERING SCIENCES (ES)

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	GE8151	Problem Solving and Python Programming	ES	3	3	0	0	3
2.	GE8152	Engineering Graphics	ES	4	2	0	4	4
3.	GE8161	Problem Solving and Python Programming Laboratory	ES	4	0	0	4	2
4.	BE8251	Basic Electrical and Electronics Engineering	ES	3	3	0	0	3
5.	GE8261	Engineering Practices Laboratory	ES	4	0	0	4	2
6.	FT8302	Pattern Engineering I	ES	3	3	0	0	3
7.	EE8362	Basic Electrical and Electronics Engineering Laboratory	ES	4	0	0	4	2
8.	TT8391	Engineering Mechanics for Textile Technologists	ES	5	3	2	0	4

PROFESSIONAL CORE (PC)

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	TT8251	Basics of Textile Technology	PC	3	3	0	0	3
2.	FT8201	Concepts of Fashion and Design	PC	2	2	0	0	2
3.	FT8301	Technology of Spinning Processes	PC	3	3	0	0	3
4.	TT8351	Characteristics of Textile Fibres	PC	4	4	0	0	4
5.	FT8303	Fundamentals of Garment Manufacturing	PC	2	2	0	0	2
6.	FT8304	Fashion Evolution	PC	3	3	0	0	3
7.	FT8311	Fashion Illustration Laboratory	PC	4	0	0	4	2
8.	FT8312	Pattern Engineering Laboratory I	PC	4	0	0	4	2
9.	FT8401	Textile Chemical Processing	PC	3	3	0	0	3
10.	FT8402	Pattern Engineering II	PC	3	3	0	0	3
11.	FT8403	Garment Production Machinery	PC	2	2	0	0	2
12.	FT8491	Fabric Manufacturing	PC	3	3	0	0	3
13.	FT8404	Garment Construction I	PC	3	3	0	0	3
14.	FT8411	Pattern Engineering Laboratory II	PC	4	0	0	4	2
15.	FT8412	Garment Construction Laboratory I	PC	4	0	0	4	2
16.	FT8501	Garment Construction II	PC	3	3	0	0	3
17.	FT8502	Knit Fabric Production	PC	2	2	0	0	2
18.	TT8681	Textile Chemical processing Laboratory	PC	4	0	0	4	2
19.	FT8511	Garment Construction Laboratory II	PC	4	0	0	4	2
20.	TT8561	Fabric Analysis Laboratory	PC	4	0	0	4	2
21.	FT8652	Industrial Engineering in Apparel Industry	PC	3	3	0	0	3
22.	FT8691	Textile Quality Evaluation	PC	3	3	0	0	3
23.	FT8601	Apparel Production Planning and Process Control	PC	3	3	0	0	3
24.	FT8651	Apparel Marketing and Merchandising	PC	3	3	0	0	3
25.	TT8591	Woven Fabric Structures	PC	3	3	0	0	3
26.	FT8611	Fashion Design Laboratory	PC	4	0	0	4	2
27.	FT8661	Textile Quality Evaluation Laboratory	PC	4	0	0	4	2
28.	FT8612	Garment Machinery Laboratory	PC	2	0	0	2	1
29.	FT8701	Apparel Costing	PC	3	3	0	0	3
30.	FT8702	Garment Finishing and Clothing Care	PC	3	3	0	0	3
31.	FT8703	Garment Accessories and Embellishments	PC	3	3	0	0	3
32.	FT8711	Computer Aided Garment Design Laboratory	PC	4	0	0	4	2

EMPLOYABILITY ENHANCEMENT COURSES (EEC)

S. No.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1.	HS8381	Interpersonal Skills/Listening and Speaking	EEC	2	0	0	2	1
2.	HS8461	Advanced Reading and Writing	EEC	2	0	0	2	1
3.	HS8581	Professional Communication	EEC	2	0	0	2	1
4.	FT8712	Internship*	EEC	0	0	0	0	2
5.	FT8811	Project Work	EEC	20	0	0	20	10

SUMMARY

S. No	Subject Area	Credits Per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	**HS**	4	4	-	-	3	-	-	-	11
2	**BS**	12	9	4	-	-	-	-	-	25
3	**ES**	9	5	5	4	-	-	-	-	23
4	**PC**	-	5	16	18	11	20	11	-	81
5	**PE**	-	-	-	-	6	3	3	6	18
6	**OE**	-	-	-	-	3	-	3	-	06
7	**EEC**	-	-	1	1	1	-	2	10	15
TOTAL		**25**	**23**	**26**	**23**	**24**	**23**	**19**	**16**	**179**

HS8151 COMMUNICATIVE ENGLISH L T P C
4 0 0 4

OBJECTIVES:

- To develop the basic reading and writing skills of first year engineering and technology students.
- To help learners develop their listening skills, which will, enable them listen to lectures and comprehend them by asking questions; seeking clarifications.
- To help learners develop their speaking skills and speak fluently in real contexts.
- To help learners develop vocabulary of a general kind by developing their reading skills

UNIT I SHARING INFORMATION RELATED TO ONESELF/FAMILY& FRIENDS 12

Reading- short comprehension passages, practice in skimming-scanning and predicting- **Writing**- completing sentences - developing hints. **Listening**- short texts- short formal and informal conversations. **Speaking-** introducing oneself - exchanging personal information- **Language development**- Wh- Questions- asking and answering-yes or no questions- parts of speech. **Vocabulary development-**- prefixes- suffixes- articles.- count/ uncount nouns.

UNIT II GENERAL READING AND FREE WRITING 12

Reading - comprehension-pre-reading-post reading- comprehension questions (multiple choice questions and /or short questions/ open-ended questions)-inductive reading- short narratives and descriptions from newspapers including dialogues and conversations (also used as short Listening texts)- register- **Writing** – paragraph writing- topic sentence- main ideas- free writing, short narrative descriptions using some suggested vocabulary and structures –**Listening**- telephonic conversations. **Speaking –** sharing information of a personal kind—greeting – taking leave- **Language development** – prepositions, conjunctions **Vocabulary development-** guessing meanings of words in context.

UNIT III GRAMMAR AND LANGUAGE DEVELOPMENT 12

Reading- short texts and longer passages (close reading) **Writing-** understanding text structure- use of reference words and discourse markers-coherence-jumbled sentences **Listening** – listening to longer texts and filling up the table- product description- narratives from different sources. **Speaking**- asking about routine actions and expressing opinions. **Language development**- degrees of comparison- pronouns- direct vs indirect questions- **Vocabulary development –** single word substitutes- adverbs.

UNIT IV READING AND LANGUAGE DEVELOPMENT 12

Reading- comprehension-reading longer texts- reading different types of texts- magazines **Writing**- letter writing, informal or personal letters-e-mails-conventions of personal email- **Listening**- listening to dialogues or conversations and completing exercises based on them. **Speaking-** speaking about oneself- speaking about one's friend- **Language development-** Tenses- simple present-simple past- present continuous and past continuous- **Vocabulary development**- synonyms-antonyms- phrasal verbs

UNIT V EXTENDED WRITING 12

Reading- longer texts- close reading –**Writing**- brainstorming -writing short essays **–** developing an outline- identifying main and subordinate ideas- dialogue writing-**Listening** – listening to talks- conversations- **Speaking –** participating in conversations- short group conversations-**Language development**-modal verbs- present/ past perfect tense - **Vocabulary development**-collocations- fixed and semi-fixed expressions

TOTAL : 60 PERIODS

OUTCOMES:

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

- Read articles of a general kind in magazines and newspapers.
- Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
- Comprehend conversations and short talks delivered in English
- Write short essays of a general kind and personal letters and emails in English.

TEXT BOOKS:

1. Board of Editors. **Using English** A Coursebook for Undergarduate Engineers and Technologists**.** Orient BlackSwan Limited, Hyderabad: 2015**.**
2. Richards, C. Jack. **Interchange Students' Book-2** New Delhi: CUP, 2015.

REFERENCES

1. Bailey, Stephen. **Academic Writing: A practical guide for students**. New York: Rutledge,2011.
2. Comfort, Jeremy, et al. **Speaking Effectively : Developing Speaking Skillsfor BusinessEnglish.** Cambridge University Press, Cambridge: Reprint 2011.
3. Dutt P. Kiranmai and RajeevanGeeta. **Basic Communication Skills,** Foundation Books: 2013.
4. Means,L. Thomas and Elaine Langlois. **English & Communication For Colleges.** CengageLearning ,USA: 2007.
5. Redston, Chris &Gillies Cunningham **Face2Face** (Pre-intermediate Student's Book& Workbook) Cambridge University Press, New Delhi: 2005.

MA8151 ENGINEERING MATHEMATICS – I

L	T	P	C
4	0	0	4

OBJECTIVES :

- The goal of this course is to achieve conceptual understanding and to retain the best traditions of traditional calculus. The syllabus is designed to provide the basic tools of calculus mainly for the purpose of modelling the engineering problems mathematically and obtaining solutions. This is a foundation course which mainly deals with topics such as single variable and multivariable calculus and plays an important role in the understanding of science, engineering, economics and computer science, among other disciplines.

UNIT I DIFFERENTIAL CALCULUS 12

Representation of functions - Limit of a function - Continuity - Derivatives - Differentiation rules - Maxima and Minima of functions of one variable.

UNIT II FUNCTIONS OF SEVERAL VARIABLES 12

Partial differentiation – Homogeneous functions and Euler's theorem – Total derivative – Change of variables – Jacobians – Partial differentiation of implicit functions – Taylor's series for functions of two variables – Maxima and minima of functions of two variables – Lagrange's method of undetermined multipliers.

UNIT III INTEGRAL CALCULUS 12

Definite and Indefinite integrals - Substitution rule - Techniques of Integration - Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integration of rational functions by partial fraction, Integration of irrational functions - Improper integrals.

UNIT IV MULTIPLE INTEGRALS 12

Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids – Change of variables in double and triple integrals.

UNIT V DIFFERENTIAL EQUATIONS 12

Higher order linear differential equations with constant coefficients - Method of variation of parameters – Homogenous equation of Euler's and Legendre's type – System of simultaneous linear differential equations with constant coefficients - Method of undetermined coefficients.

TOTAL : 60 PERIODS

OUTCOMES :

After completing this course, students should demonstrate competency in the following skills:

- Use both the limit definition and rules of differentiation to differentiate functions.
- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

TEXT BOOKS :

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2014.
2. James Stewart, "Calculus: Early Transcendentals", Cengage Learning, 7th Edition, New Delhi, 2015. [For Units I & III - Sections 1.1, 2.2, 2.3, 2.5, 2.7(Tangents problems only), 2.8, 3.1 to 3.6, 3.11, 4.1, 4.3, 5.1(Area problems only), 5.2, 5.3, 5.4 (excluding net change theorem), 5.5, 7.1 - 7.4 and 7.8].

REFERENCES :

1. Anton, H, Bivens, I and Davis, S, "Calculus", Wiley, 10th Edition, 2016.
2. Jain R.K. and Iyengar S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 3rd Edition, 2007.
3. Narayanan, S. and Manicavachagom Pillai, T. K., "Calculus" Volume I and II, S. Viswanathan Publishers Pvt. Ltd., Chennai, 2007.
4. Srimantha Pal and Bhunia, S.C, "Engineering Mathematics" Oxford University Press, 2015.
5. Weir, M.D and Joel Hass, "Thomas Calculus", 12th Edition, Pearson India, 2016.

PH8151	ENGINEERING PHYSICS	L	T	P	C
		3	0	0	3

OBJECTIVES:

- To enhance the fundamental knowledge in Physics and its applications relevant to various streams of Engineering and Technology.

UNIT I PROPERTIES OF MATTER 9

Elasticity – Stress-strain diagram and its uses - factors affecting elastic modulus and tensile strength – torsional stress and deformations – twisting couple - torsion pendulum: theory and experiment - bending of beams - bending moment – cantilever: theory and experiment – uniform and non-uniform bending: theory and experiment - I-shaped girders - stress due to bending in beams.

UNIT II WAVES AND FIBER OPTICS 9

Oscillatory motion – forced and damped oscillations: differential equation and its solution – plane progressive waves – wave equation. Lasers : population of energy levels, Einstein's A and B coefficients derivation – resonant cavity, optical amplification (qualitative) – Semiconductor lasers: homojunction and heterojunction – Fiber optics: principle, numerical aperture and acceptance angle - types of optical fibres (material, refractive index, mode) – losses associated with optical fibers - fibre optic sensors: pressure and displacement.

UNIT III THERMAL PHYSICS 9

Transfer of heat energy – thermal expansion of solids and liquids – expansion joints - bimetallic strips - thermal conduction, convection and radiation – heat conductions in solids – thermal conductivity - Forbe's and Lee's disc method: theory and experiment - conduction through compound media (series and parallel) – thermal insulation – applications: heat exchangers, refrigerators, ovens and solar water heaters.

UNIT IV QUANTUM PHYSICS 9

Black body radiation – Planck's theory (derivation) – Compton effect: theory and experimental verification – wave particle duality – electron diffraction – concept of wave function and its physical significance – Schrödinger's wave equation – time independent and time dependent equations – particle in a one-dimensional rigid box – tunnelling (qualitative) - scanning tunnelling microscope.

UNIT V CRYSTAL PHYSICS 9

Single crystalline, polycrystalline and amorphous materials – single crystals: unit cell, crystal systems, Bravais lattices, directions and planes in a crystal, Miller indices – inter-planar distances - coordination number and packing factor for SC, BCC, FCC, HCP and diamond structures - crystal imperfections: point defects, line defects – Burger vectors, stacking faults – role of imperfections in plastic deformation - growth of single crystals: solution and melt growth techniques.

TOTAL : 45 PERIODS

OUTCOMES:

Upon completion of this course,

- the students will gain knowledge on the basics of properties of matter and its applications,
- the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,

- the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
- the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
- the students will understand the basics of crystals, their structures and different crystal growth techniques.

TEXT BOOKS:

1. Bhattacharya, D.K. & Poonam, T. "Engineering Physics". Oxford University Press, 2015.
2. Gaur, R.K. & Gupta, S.L. "Engineering Physics". Dhanpat Rai Publishers, 2012.
3. Pandey, B.K. & Chaturvedi, S. "Engineering Physics". Cengage Learning India, 2012.

REFERENCES:

1. Halliday, D., Resnick, R. & Walker, J. "Principles of Physics". Wiley, 2015.
2. Serway, R.A. & Jewett, J.W. "Physics for Scientists and Engineers". Cengage Learning, 2010.
3. Tipler, P.A. & Mosca, G. "Physics for Scientists and Engineers with Modern Physics'. W.H.Freeman, 2007.

CY8151 ENGINEERING CHEMISTRY L T P C
3 0 0 3

OBJECTIVES:

- To make the students conversant with boiler feed water requirements, related problems and water treatment techniques.
- To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
- Preparation, properties and applications of engineering materials.
- Types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.
- Principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.

UNIT I WATER AND ITS TREATMENT 9

Hardness of water – types – expression of hardness – units – estimation of hardness of water by EDTA – numerical problems – boiler troubles (scale and sludge) – treatment of boiler feed water – Internal treatment (phosphate, colloidal, sodium aluminate and calgon conditioning) external treatment – Ion exchange process, zeolite process – desalination of brackish water - Reverse Osmosis.

UNIT II SURFACE CHEMISTRY AND CATALYSIS 9

Adsorption: Types of adsorption – adsorption of gases on solids – adsorption of solute from solutions – adsorption isotherms – Freundlich's adsorption isotherm – Langmuir's adsorption isotherm – contact theory – kinetics of surface reactions, unimolecular reactions, Langmuir - applications of adsorption on pollution abatement.

Catalysis: Catalyst – types of catalysis – criteria – autocatalysis – catalytic poisoning and catalytic promoters - acid base catalysis – applications (catalytic convertor) – enzyme catalysis– Michaelis – Menten equation.

UNIT III ALLOYS AND PHASE RULE 9

Alloys: Introduction- Definition- properties of alloys- significance of alloying, functions and effect of alloying elements- Nichrome and stainless steel (18/8) – heat treatment of steel. Phase rule: Introduction, definition of terms with examples, one component system -water system - reduced phase rule - thermal analysis and cooling curves - two component systems - lead-silver system - Pattinson process.

UNIT IV FUELS AND COMBUSTION 9

Fuels: Introduction - classification of fuels - coal - analysis of coal (proximate and ultimate) - carbonization - manufacture of metallurgical coke (Otto Hoffmann method) - petroleum - manufacture of synthetic petrol (Bergius process) - knocking - octane number - diesel oil - cetane number - natural gas - compressed natural gas (CNG) - liquefied petroleum gases (LPG) - power alcohol and biodiesel. Combustion of fuels: Introduction - calorific value - higher and lower calorific values- theoretical calculation of calorific value - ignition temperature - spontaneous ignition temperature - explosive range - flue gas analysis (ORSAT Method).

UNIT V ENERGY SOURCES AND STORAGE DEVICES 9

Nuclear fission - controlled nuclear fission - nuclear fusion - differences between nuclear fission and fusion - nuclear chain reactions - nuclear energy - light water nuclear power plant - breeder reactor - solar energy conversion - solar cells - wind energy. Batteries, fuel cells and supercapacitors: Types of batteries – primary battery (dry cell) secondary battery (lead acid battery, lithium-ion-battery) fuel cells – H_2-O_2 fuel cell.

TOTAL: 45 PERIODS

OUTCOMES:

- The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

TEXT BOOKS:

1. S. S. Dara and S. S. Umare, “A Textbook of Engineering Chemistry”, S. Chand & Company LTD, New Delhi, 2015
2. P. C. Jain and Monika Jain, “Engineering Chemistry” Dhanpat Rai Publishing Company (P) LTD, New Delhi, 2015
3. S. Vairam, P. Kalyani and Suba Ramesh, “Engineering Chemistry”, Wiley India PVT, LTD, New Delhi, 2013.

REFERENCES:

1. Friedrich Emich, “Engineering Chemistry”, Scientific International PVT, LTD, New Delhi, 2014.
2. Prasanta Rath, “Engineering Chemistry”, Cengage Learning India PVT, LTD, Delhi, 2015.
3. Shikha Agarwal, “Engineering Chemistry-Fundamentals and Applications”, Cambridge University Press, Delhi, 2015.

GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING L T P C

3 0 0 3

OBJECTIVES:

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.

- To define Python functions and call them.
- To use Python data structures –- lists, tuples, dictionaries.
- To do input/output with files in Python.

UNIT I ALGORITHMIC PROBLEM SOLVING 9

Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion). Illustrative problems: find minimum in a list, insert a card in a list of sorted cards, guess an integer number in a range, Towers of Hanoi.

UNIT II DATA, EXPRESSIONS, STATEMENTS 9

Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

UNIT III CONTROL FLOW, FUNCTIONS 9

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays. Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.

UNIT IV LISTS, TUPLES, DICTIONARIES 9

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Illustrative programs: selection sort, insertion sort, mergesort, histogram.

UNIT V FILES, MODULES, PACKAGES 9

Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.

OUTCOMES:

Upon completion of the course, students will be able to

- Develop algorithmic solutions to simple computational problems
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python Programs.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/think-python/)
2. Guido van Rossum and Fred L. Drake Jr, "An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

REFERENCES:

1. Charles Dierbach, “Introduction to Computer Science using Python: A Computational Problem-Solving Focus, Wiley India Edition, 2013.
2. John V Guttag, “Introduction to Computation and Programming Using Python’’, Revised and expanded Edition, MIT Press , 2013
3. Kenneth A. Lambert, “Fundamentals of Python: First Programs”, CENGAGE Learning, 2012.
4. Paul Gries, Jennifer Campbell and Jason Montojo, “Practical Programming: An Introduction to Computer Science using Python 3”, Second edition, Pragmatic Programmers, LLC, 2013.
5. Robert Sedgewick, Kevin Wayne, Robert Dondero, “Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
6. Timothy A. Budd, “Exploring Python”, Mc-Graw Hill Education (India) Private Ltd.,, 2015.

GE8152 ENGINEERING GRAPHICS L T P C
2 0 4 4

OBJECTIVES:

- To develop in students, graphic skills for communication of concepts, ideas and design of Engineering products.
- To expose them to existing national standards related to technical drawings.

CONCEPTS AND CONVENTIONS (Not for Examination) 1

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

UNIT I PLANE CURVES AND FREEHAND SKETCHING 7+12

Basic Geometrical constructions, Curves used in engineering practices: Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square and circle – Drawing of tangents and normal to the above curves.

Visualization concepts and Free Hand sketching: Visualization principles –Representation of Three Dimensional objects – Layout of views- Freehand sketching of multiple views from pictorial views of objects

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACE 6+12

Orthographic projection- principles-Principal planes-First angle projection-projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and traces Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

UNIT III PROJECTION OF SOLIDS 5+12

Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes by rotating object method.

UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES 5+12

Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one

of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones.

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS 6+12

Principles of isometric projection – isometric scale –Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions - Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method .

TOTAL: 90 PERIODS

OUTCOMES:

On successful completion of this course, the student will be able to

- familiarize with the fundamentals and standards of Engineering graphics
- perform freehand sketching of basic geometrical constructions and multiple views of objects.
- project orthographic projections of lines and plane surfaces.
- draw projections and solids and development of surfaces.
- visualize and to project isometric and perspective sections of simple solids.

TEXT BOOK:

1. Natrajan K.V., "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2009.
2. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.

REFERENCES:

1. Basant Agarwal and Agarwal C.M., "Engineering Drawing", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
2. Bhatt N.D. and Panchal V.M., "Engineering Drawing", Charotar Publishing House, 50th Edition, 2010.
3. Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Stores, Bangalore, 2007.
4. Luzzader, Warren.J. and Duff,John M., "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi, 2005.
5. N S Parthasarathy And Vela Murali, "Engineering Graphics", Oxford University, Press, New Delhi, 2015.
6. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson, 2nd Edition, 2009.

Publication of Bureau of Indian Standards:

1. IS 10711 – 2001: Technical products Documentation – Size and lay out of drawing sheets.
2. IS 9609 (Parts 0 & 1) – 2001: Technical products Documentation – Lettering.
3. IS 10714 (Part 20) – 2001 & SP 46 – 2003: Lines for technical drawings.
4. IS 11669 – 1986 & SP 46 – 2003: Dimensioning of Technical Drawings.
5. IS 15021 (Parts 1 to 4) – 2001: Technical drawings – Projection Methods.

Special points applicable to University Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The

students will be permitted to use appropriate scale to fit solution within A3 size. The examination will be conducted in appropriate sessions on the same day

GE8161	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	L T P C 0 0 4 2

OBJECTIVES:

- To write, test, and debug simple Python programs.
- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python.

LIST OF PROGRAMS

1. Compute the GCD of two numbers.
2. Find the square root of a number (Newton's method)
3. Exponentiation (power of a number)
4. Find the maximum of a list of numbers
5. Linear search and Binary search
6. Selection sort, Insertion sort
7. Merge sort
8. First n prime numbers
9. Multiply matrices
10. Programs that take command line arguments (word count)
11. Find the most frequent words in a text read from a file
12. Simulate elliptical orbits in Pygame
13. Simulate bouncing ball using Pygame

PLATFORM NEEDED

Python 3 interpreter for Windows/Linux

OUTCOMES:

Upon completion of the course, students will be able to

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling them.
- Use Python lists, tuples, dictionaries for representing compound data.
- Read and write data from/to files in Python.

TOTAL :60 PERIODS

BS8161	PHYSICS AND CHEMISTRY LABORATORY (Common to all branches of B.E. / B.Tech Programmes)	L T P C 0 0 4 2

OBJECTIVES:

- To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics, properties of matter and liquids.

LIST OF EXPERIMENTS: PHYSICS LABORATORY (Any 5 Experiments)

1. Determination of rigidity modulus – Torsion pendulum
2. Determination of Young's modulus by non-uniform bending method

3. (a) Determination of wavelength, and particle size using Laser
   (b) Determination of acceptance angle in an optical fiber.
4. Determination of thermal conductivity of a bad conductor – Lee's Disc method.
5. Determination of velocity of sound and compressibility of liquid – Ultrasonic interferometer
6. Determination of wavelength of mercury spectrum – spectrometer grating
7. Determination of band gap of a semiconductor
8. Determination of thickness of a thin wire – Air wedge method

TOTAL: 30 PERIODS

OUTCOMES:

Upon completion of the course, the students will be able to

- apply principles of elasticity, optics and thermal properties for engineering applications.

CHEMISTRY LABORATORY: (Any seven experiments to be conducted)

OBJECTIVES:

- To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
- To acquaint the students with the determination of molecular weight of a polymer by viscometery.

1. Estimation of HCl using Na_2CO_3 as primary standard and Determination of alkalinity in water sample.
2. Determination of total, temporary & permanent hardness of water by EDTA method.
3. Determination of DO content of water sample by Winkler's method.
4. Determination of chloride content of water sample by argentometric method.
5. Estimation of copper content of the given solution by Iodometry.
6. Determination of strength of given hydrochloric acid using pH meter.
7. Determination of strength of acids in a mixture of acids using conductivity meter.
8. Estimation of iron content of the given solution using potentiometer.
9. Estimation of iron content of the water sample using spectrophotometer (1, 10-Phenanthroline / thiocyanate method).
10. Estimation of sodium and potassium present in water using flame photometer.
11. Determination of molecular weight of polyvinyl alcohol using Ostwald viscometer.
12. Pseudo first order kinetics-ester hydrolysis.
13. Corrosion experiment-weight loss method.
14. Determination of CMC.
15. Phase change in a solid.
16. Conductometric titration of strong acid vs strong base.

OUTCOMES:

- The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

TOTAL: 30 PERIODS

TEXTBOOKS:

1. Vogel's Textbook of Quantitative Chemical Analysis (8^{TH} edition, 2014)

HS8251 **TECHNICAL ENGLISH** **L T P C**
4 0 0 4

OBJECTIVES:

The Course prepares second semester engieering and Tecgnology students to:

- Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
- Foster their ability to write convincing job applications and effective reports.
- Develop their speaking skills to make technical presentations , participate in group discussions.
- Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialisation.

UNIT I INTRODUCTION TECHNICAL ENGLISH 12

Listening- Listening to talks mostly of a scientific/technical nature and completing information-gap exercises- **Speaking** –Asking for and giving directions- **Reading** – reading short technical texts from journals- newsapapers- **Writing**- purpose statements – extended definitions – issue- writing instructions – checklists-recommendations-**Vocabulary Development**- technical vocabulary **Language Development** –subject verb agreement - compound words.

UNIT II READING AND STUDY SKILLS 12

Listening- Listening to longer technical talks and completing exercises based on them-**Speaking** – describing a process-**Reading** – reading longer technical texts- identifying the various transitions in a text- paragraphing- **Writing**- interpreting cgarts, graphs- **Vocabulary Development-** vocabularyused in formal letters/emails and reports **Language Development-** impersonal passive voice, numerical adjectives.

UNIT III TECHNICAL WRITING AND GRAMMAR 12

Listening- Listening to classroom lectures/ talkls on engineering/technology -**Speaking** – introduction to technical presentations- **Reading** – longer texts both general and technical, practice in speed reading; **Writing**-Describing a process, use of sequence words- **Vocabulary Development-** sequence words- Misspelled words. **Language Development-** embedded sentences

UNIT IV REPORT WRITING 12

Listening- Listening to documentaries and making notes. **Speaking** – mechanics of presentations- **Reading** – reading for detailed comprehension- **Writing**- email etiquette- job application – cover letter –Résumé preparation(via email and hard copy)- analytical essays and issue based essays--**Vocabulary Development**- finding suitable synonyms-paraphrasing-. **Language Development-** clauses- if conditionals.

UNIT V GROUP DISCUSSION AND JOB APPLICATIONS 12

Listening- TED/Ink talks; **Speaking** –participating in a group discussion -**Reading**– reading and understanding technical articles **Writing**– Writing reports- minutes of a meeting- accident and survey-**Vocabulary Development- verbal analogies Language Development-** reported speech .

TOTAL :60 PERIODS

OUTCOMES: At the end of the course learners will be able to:

- Read technical texts and write area- specific texts effortlessly.
- Listen and comprehend lectures and talks in their area of specialisation successfully.

- Speak appropriately and effectively in varied formal and informal contexts.
- Write reports and winning job applications.

TEXT BOOKS:

1. Board of editors. **Fluency in English A Course book for Engineering and Technology.** Orient Blackswan, Hyderabad: 2016.
2. Sudharshana.N.P and Saveetha. C. **English for Technical Communication**. Cambridge University Press: New Delhi, 2016.

REFERENCES

1. Booth-L. Diana**, Project Work,** Oxford University Press**,** Oxford: 2014.
2. Grussendorf, Marion, **English for Presentations,** Oxford University Press, Oxford: 2007
3. Kumar, Suresh. E. **Engineering English**. Orient Blackswan: Hyderabad,2015.
4. Means, L. Thomas and Elaine Langlois, **English & Communication For Colleges.** Cengage Learning, USA: 2007
5. Raman, Meenakshi and Sharma, Sangeetha- **Technical Communication Principles and Practice.**Oxford University Press: New Delhi,2014.

Students can be asked to read Tagore, Chetan Bhagat and for suplementary reading.

MA8251 ENGINEERING MATHEMATICS – II L T P C
4 0 0 4

OBJECTIVES :

- This course is designed to cover topics such as Matrix Algebra, Vector Calculus, Complex Analysis and Laplace Transform. Matrix Algebra is one of the powerful tools to handle practical problems arising in the field of engineering. Vector calculus can be widely used for modelling the various laws of physics. The various methods of complex analysis and Laplace transforms can be used for efficiently solving the problems that occur in various branches of engineering disciplines.

UNIT I MATRICES 12

Eigenvalues and Eigenvectors of a real matrix – Characteristic equation – Properties of Eigenvalues and Eigenvectors – Cayley-Hamilton theorem – Diagonalization of matrices – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms.

UNIT II VECTOR CALCULUS 12

Gradient and directional derivative – Divergence and curl - Vector identities – Irrotational and Solenoidal vector fields – Line integral over a plane curve – Surface integral - Area of a curved surface - Volume integral - Green's, Gauss divergence and Stoke's theorems – Verification and application in evaluating line, surface and volume integrals.

UNIT III ANALYTIC FUNCTIONS 12

Analytic functions – Necessary and sufficient conditions for analyticity in Cartesian and polar coordinates - Properties – Harmonic conjugates – Construction of analytic function - Conformal mapping – Mapping by functions $w = z + c, cz, \frac{1}{z}, z^2$ - Bilinear transformation.

UNIT IV COMPLEX INTEGRATION 12

Line integral - Cauchy's integral theorem – Cauchy's integral formula – Taylor's and Laurent's series – Singularities – Residues – Residue theorem – Application of residue theorem for evaluation of real integrals – Use of circular contour and semicircular contour.

UNIT V LAPLACE TRANSFORMS 12

Existence conditions – Transforms of elementary functions – Transform of unit step function and unit impulse function – Basic properties – Shifting theorems -Transforms of derivatives and integrals – Initial and final value theorems – Inverse transforms – Convolution theorem – Transform of periodic functions – Application to solution of linear second order ordinary differential equations with constant coefficients.

TOTAL: 60 PERIODS

OUTCOMES :

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
- Gradient, divergence and curl of a vector point function and related identities.
- Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
- Analytic functions, conformal mapping and complex integration.
- Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

TEXT BOOKS :

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2014.
2. Kreyszig Erwin, "Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2016.

REFERENCES :

1. Bali N., Goyal M. and Watkins C., "Advanced Engineering Mathematics", Firewall Media (An imprint of Lakshmi Publications Pvt., Ltd.,), New Delhi, 7th Edition, 2009.
2. Jain R.K. and Iyengar S.R.K., " Advanced Engineering Mathematics ", Narosa Publications, New Delhi , 3rd Edition, 2007.
3. O'Neil, P.V. "Advanced Engineering Mathematics", Cengage Learning India Pvt., Ltd, New Delhi, 2007.
4. Sastry, S.S, "Engineering Mathematics", Vol. I & II, PHI Learning Pvt. Ltd, 4th Edition, New Delhi, 2014.
5. Wylie, R.C. and Barrett, L.C., "Advanced Engineering Mathematics "Tata McGraw Hill Education Pvt. Ltd, 6th Edition, New Delhi, 2012.

CY8292 CHEMISTRY FOR TECHNOLOGISTS L T P C

3 0 0 3

UNIT I UNIT PROCESSES 9

Nitration, Sulphonation, Halogenation, Esterification, Amination, Saponification and Hydrogenation – Role of the above unit processes in such industries as petroleum, drugs, pharmaceuticals and organic synthesis.

UNIT II REACTION MECHANISMS 9

Free radical, substitutions, electrophilic, addition, aromatic electrophilic substitutions, nucleophilic additions, condensation reactions, nucleophilic substitutions in aliphatic and aromatic compounds, cyclo-additions, rearrangements-Beckmann and Fries rearrangement reactions.

UNIT III OILS, FATS, SOAPS & LUBRICANTS 9

Chemical constitution, Chemical analysis of oils and fats – acid, saponification and iodine values, Definitions, determinations and significance. Definition, mechanism of lubrication, preparation of petrolubes, desirable characteristics – viscosity, viscosity index, carbon residue, oxidation stability, flash and fire points, cloud and pour points, aniline point. Semisolid lubricant – greases, preparation of sodium, lithium, calcium and axle greases and uses, consistency test and drop point test. Solid lubricants – graphite and molybdenum disulphide.

UNIT IV CHEMICALS AND AUXILIARIES 9

Preparation, properties and uses of bleaching powder, sodium hypochlorite, hydrogen peroxide, chlorine dioxide. Estimation of available chlorine in hypochlorite bleach liquor. Determination of strength of hydrogen peroxide.

UNIT V COLORANTS 9

Theory of color and constitution: chromophore and auxochrome, classification of dyes based on application. Chemistry and synthesis of azo dye (Methyl red, Methyl orange and Congo red)

TOTAL: 45 PERIODS

TEXTBOOKS:

1. Dhara S. S., "A Text Book of Engineering Chemistry", 12th Ed., S. Chand & Co. Ltd., New Delhi, 2016.
2. Jain. P.C. and Monica Jain, "Engineering Chemistry", Dhanpet Rai & Sons, New Delhi, 2012.
3. Shikha Agarwal, "Engineering Chemistry-Fundamentals and Applications", Cambridge University Press, Delhi, 2015.

REFERENCES:

1. W.L. McCabe, J.C. Smith and P. Harriot, Unit Operations of Chemical Engineering, 7th Edition, McGraw Hill Education, 2005.
2. B.K. Sharma, "Industrial chemistry", Krishna Prakashan Media (P) Ltd, Meerut, 2011.
3. Shore J., "Colourants and Auxiliaries: Volume II Auxiliaries", Wood head Publishing Ltd., 2002.
4. Shenai V. A., "Chemistry of Dyes and Principles of Dyeing", Sevak Publications, Mumbai, 1995.
5. Trotman E. R., "Dyeing and Chemical Technology of Textile Fibres", B.I Publishing Pvt. Ltd., New Delhi, 1994.

BE8251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING L T P C

3 0 0 3

OBJECTIVES:

- To explain the basic theorems used in Electrical circuits and the different components and function of electrical machines.
- To explain the fundamentals of semiconductor and applications.
- To explain the principles of digital electronics

- To impart knowledge of communication.

UNIT I ELECTRICAL CIRCUITS & MEASURMENTS 9

Fundamental laws of electric circuits– Steady State Solution of DC Circuits – Introduction to AC Circuits –Sinusoidal steady state analysis– Power and Power factor – Single Phase and Three Phase Balanced Circuits. Classification of instruments – Operating Principles of indicating Instruments

UNIT II ELECTRICAL MACHINES 9

Construction, Principle of Operation, Basic Equations and Applications of DC Generators, DC Motors, Single Phase Transformer, single phase induction Motor.

UNIT III SEMICONDUCTOR DEVICES AND APPLICATIONS 9

Introduction - Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation.

Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics – Elementary Treatment of Small Signal Amplifier.

UNIT IV DIGITAL ELECTRONICS 9

Binary Number System – Boolean Algebra theorems– Digital circuits - Introduction to sequential Circuits– Flip-Flops – Registers and Counters – A/D and D/A Conversion –digital processing architecture.

UNIT V FUNDAMENTALS OF COMMUNICATION ENGINEERING 9

Introduction – Elements of Communication Systems– Modulation and Demodulation: Principles of Amplitude and Frequency Modulations. Digital Communication - Communication Systems: Radio, Antenna, TV, Fax, ISDN, Microwave, Satellite and Optical Fibre (Block Diagram Approach only).

TOTAL: 45 PERIODS

OUTCOMES:

- ability to identify the electrical components and explain the characteristics of electrical machines.
- ability to identify electronics components and understand the characteristics

TEXT BOOKS:

1. D P Kothari and I.J Nagarath, ”Electrical Machines “Basic Electrical and Electronics Engineering”, McGraw Hill Education(India) Private Limited, Third Reprint ,2016
2. S.K.Bhattacharya “Basic Electrical and Electronics Engineering”, Pearson India, 2011
3. Sedha R.S., “Applied Electronics”, S. Chand & Co., 2006

REFERENCES:

1. Leonard S Bobrow, “ Foundations of Electrical Engineering”, Oxford University Press, 2013
2. A.E.Fitzgerald, David E Higginbotham and Arvin Grabel, “Basic Electrical Engineering”, McGraw Hill Education(India) Private Limited, 2009
3. Del Toro, “Electrical Engineering Fundamentals”, Pearson Education, New Delhi, 2007
4. Mahmood Nahvi and Joseph A. Edminister, “Electric Circuits”, Schaum’ Outline Series, McGraw Hill, 2002.
5. Mehta V K, “Principles of Electronics”, S.Chand & Company Ltd, 1994.
6. Nagsarkar T K and Sukhija M S, “Basics of Electrical Engineering”, Oxford press 2005.

TT8251 BASICS OF TEXTILE TEHNOLOGY L T P C
3 0 0 3

OBJECTIVES

- To enable the students to learn about the basics of fibre forming, yarn production, fabric formation, coloration of fabrics and garment manufacturing

UNIT I BASICS OF FIBRE SCIENCE AND SPINNING 13

Definition of fibre, classification of textile fibers; polymer and polymerization; fibre production principles – wet spinning, dry spinning, melt spinning, gel spinning, dope spinning; characteristics of cotton, viscose, wool, silk, polyester, nylon, polypropylene; sequence of machineries in short staple yarn spinning from ginning to cone winding and their objectives.

UNIT II BASICS OF FABRIC PRODUCTION 13

Woven fabric – warp, weft, weaving, path of warp; looms – classification, handloom and its parts, powerloom, automatic looms, shuttleless looms, special type of looms; preparatory machines for weaving process and their objectives; basic weaving mechanism - primary, secondary and auxiliary mechanisms; knitting – classification, principle, types of fabrics; nonwoven process – classification, principle, types of fabrics.

UNIT III BASICS OF CHEMICAL PROCESSING 9

Objectives of the processes - singeing, desizing, scouring, bleaching, mercerization; dyeing-classification of dyes, types of dyeing techniques; printing –types and styles of printing; finishing treatments – chemical and mechanical finishing.

UNIT IV BASICS OF GARMENT MANUFACTURING 5

Anthropometry, basic principles of pattern making and grading, marker planning, spreading, cutting, sorting, sewing, finishing and packing.

UNIT V BASIC FIBRE, YARN AND FABRIC PROPERTIES 5

Essential fibre properties- cotton and polyester; yarn numbering systems; essential yarn properties; fabric specifications and essential fabric properties

TOTAL – 45 PERIODS

OUTCOMES:

- The students will have the knowledge on the basics of fibre forming polymers, weaving the yarns into fabric, coloration of the fabrics and manufacturing of garments.

TEXT BOOKS

1. Hornberer M., Eberle H., Kilgus R., Ring W. and Hermeling H., “Clothing Technology: From Fibre to Fabric”, Europa Lehrmittel Verlag, 2008, ISBN: 3808562250 / ISBN: 978-3808562253.
2. Wynne A., “Motivate Series-Textiles”, Maxmillan Publications, London, 1997.
3. Carr H. and Latham B., “The Technology of Clothing Manufacture” Backwell Science, U.K., 1994, ISBN: 0632037482 / ISBN:13: 9780632037483 □

REFERENCE BOOKS

1. Banerjee N. N., “Weaving Mechanism”, Textile Book House, ISBN: B001A1S41A, 1986.
2. Booth J. E., “Textile Mathematics Volume 3”, The Textile Institute, Manchester, 1977, ISBN: 090073924X.
3. Marks R. and Robinson T. C., “Principles of Weaving”, The Textile Institute, Manchester, 1989, ISBN: 0900739258.

4. Mishra G. S., “Introductory Polymer Chemistry”, John Wiley & Sons, Dhanpat Rai & Co. Pvt. Ltd., 2003, ISBN: 8122404715 / ISBN: 9788122404715.
5. Oxtoby E., “Spun Yarn Technology “, Butterworth, London, 1987, ISBN: 1483129381 / ISBN: 9781483129389.
6. Trotman E. R., “Dyeing and Chemical Technology of Textile Fibres”, B.I Publishing Pvt. Ltd., New Delhi, 1994, ISBN: 0471809101 / ISBN: 9780471809104.

FT8201 CONCEPTS OF FASHION AND DESIGN L T P C
2 0 0 2

OBJECTIVES:

- To introduce briefly the basic concepts of fashion and design to the students

UNIT I **6**

Design types- natural, stylized, geometric, historic and abstract; garment design- structural, decorative and functional.

UNIT II **6**

Elements of Design –line, shape, form, size, colour, texture and pattern; principles of design – Harmony, Balance, Rhythm, Emphasis and Proportion; introducing elements and principles of design in apparels.

UNIT III **6**

Colour – definition; dimensions of colour-hue, value and intensity; colour categories and psychology - warm and cool colours; advancing and receding colours; colour theories – Prang colour system and Munsell colour system; colour harmonies.

UNIT IV **12**

Fashion – definition, tangibles and intangibles of fashion; fashion life cycle; fashion adoption theories; fashion terminology -street fashion, recurring fashion, mass fashion, fashion trend, fashion shows, style, chic, boutique, Haute Couture; role of a fashion designer.

TOTAL: 30 PERIODS

OUTCOME

- Upon the completion of this course, the students shall understand the basic concepts of fashion and design, colour basics, dimensions, categories and their characteristics.

TEXT BOOKS:

1. Suzanne G. Marshall and Hazel O. Jackson, “Individuality in Clothing and Personal Appearance”, Prentice Hall, New Jersey, 2000, ISBN: 0023622008 / ISBN: 978-0023622007.
2. Kathryn McKelvey and Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Blackwell Publishing, USA, 2005, ISBN: 978-0-470-65577-1.
3. Angel Fernandez and Gabriel Martin Roig, “Drawing for fashion designers”, Anova books company ltd., UK, 2007, ISBN: 0713490756 / ISBN: 978-0713490756.

REFERENCES:

1. Diane T. and Cassidy T., “Colour forecasting”, Blackwell Publishing, 2005, ISBN: 1405121203 / ISBN: 978-1405121200.
2. Elaine Stone and Jean A. Samples, “Fashion Merchandising”, McGraw-Hill Book Company, 1985, ISBN: 0070617422.
3. Elizabeth Rouse, “Understanding Fashion”, Blackwell Scientific Publication, Oxford, 1989, ISBN: 0632018917 / ISBN: 9780632018918.

4. Harold Carr, “Fashion Design and Product Development”, John Wiley and Sons Inc., NewYork,1992, ISBN: 978-0-632-02893.
5. Marian L. Davis, “Visual Design and Dress”, Prentice Hall, New Jersey, 1996, ISBN: 0131121294 / ISBN: 978-0131121294.

GE8261 ENGINEERING PRACTICES LABORATORY L T P C
0 0 4 2

OBJECTIVES:

To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

GROUP A (CIVIL & MECHANICAL)

I CIVIL ENGINEERING PRACTICE 13

Buildings:

(a) Study of plumbing and carpentry components of residential and industrial buildings. Safety aspects.

Plumbing Works:

(a) Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, elbows in household fittings.
(b) Study of pipe connections requirements for pumps and turbines.
(c) Preparation of plumbing line sketches for water supply and sewage works.
(d) Hands-on-exercise:
Basic pipe connections – Mixed pipe material connection – Pipe connections with different joining components.
(e) Demonstration of plumbing requirements of high-rise buildings.

Carpentry using Power Tools only:

(a) Study of the joints in roofs, doors, windows and furniture.
(b) Hands-on-exercise:
Wood work, joints by sawing, planing and cutting.

II MECHANICAL ENGINEERING PRACTICE 18

Welding:

(a) Preparation of butt joints, lap joints and T- joints by Shielded metal arc welding.
(b) Gas welding practice

Basic Machining:

(a) Simple Turning and Taper turning
(b) Drilling Practice

Sheet Metal Work:

(a) Forming & Bending:
(b) Model making – Trays and funnels.
(c) Different type of joints.

Machine assembly practice:

(a) Study of centrifugal pump
(b) Study of air conditioner

Demonstration on:

(a) Smithy operations, upsetting, swaging, setting down and bending. Example – Exercise – Production of hexagonal headed bolt.

(b) Foundry operations like mould preparation for gear and step cone pulley.
(c) Fitting – Exercises – Preparation of square fitting and V – fitting models.

GROUP B (ELECTRICAL & ELECTRONICS)

III ELECTRICAL ENGINEERING PRACTICE 13

1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lamp wiring.
3. Stair case wiring
4. Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit.
5. Measurement of energy using single phase energy meter.
6. Measurement of resistance to earth of an electrical equipment.

IV ELECTRONICS ENGINEERING PRACTICE 16

1. Study of Electronic components and equipments – Resistor, colour coding measurement of AC signal parameter (peak-peak, rms period, frequency) using CR.
2. Study of logic gates AND, OR, EX-OR and NOT.
3. Generation of Clock Signal.
4. Soldering practice – Components Devices and Circuits – Using general purpose PCB.
5. Measurement of ripple factor of HWR and FWR.

TOTAL: 60 PERIODS

OUTCOMES:

On successful completion of this course, the student will be able to

- fabricate carpentry components and pipe connections including plumbing works.
- use welding equipments to join the structures.
- Carry out the basic machining operations
- Make the models using sheet metal works
- Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and
- fittings
- Carry out basic home electrical works and appliances
- Measure the electrical quantities
- Elaborate on the components, gates, soldering practices.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

CIVIL

1. Assorted components for plumbing consisting of metallic pipes, plastic pipes, flexible pipes, couplings, unions, elbows, plugs and other fittings.	15 Sets.
2. Carpentry vice (fitted to work bench)	15 Nos.
3. Standard woodworking tools	15 Sets.
4. Models of industrial trusses, door joints, furniture joints	5 each
5. Power Tools: (a) Rotary Hammer	2 Nos
(b) Demolition Hammer	2 Nos
(c) Circular Saw	2 Nos
(d) Planer	2 Nos
(e) Hand Drilling Machine	2 Nos
(f) Jigsaw	2 Nos

MECHANICAL

1. Arc welding transformer with cables and holders	5 Nos.
2. Welding booth with exhaust facility	5 Nos.
3. Welding accessories like welding shield, chipping hammer, wire brush, etc.	5 Sets.
4. Oxygen and acetylene gas cylinders, blow pipe and other welding outfit.	2 Nos.
5. Centre lathe	2 Nos.
6. Hearth furnace, anvil and smithy tools	2 Sets.
7. Moulding table, foundry tools	2 Sets.
8. Power Tool: Angle Grinder	2 Nos
9. Study-purpose items: centrifugal pump, air-conditioner	One each.

ELECTRICAL

1. Assorted electrical components for house wiring	15 Sets
2. Electrical measuring instruments	10 Sets
3. Study purpose items: Iron box, fan and regulator, emergency lamp	1 each
4. Megger (250V/500V)	1 No.
5. Power Tools: (a) Range Finder	2 Nos
(b) Digital Live-wire detector	2 Nos

ELECTRONICS

1. Soldering guns	10 Nos.
2. Assorted electronic components for making circuits	50 Nos.
3. Small PCBs	10 Nos.
4. Multimeters	10 Nos.
5. Study purpose items: Telephone, FM radio, low-voltage power supply	

CY8261 APPLIED CHEMISTRY LABORATORY L T P C
0 0 4 2

OBJECTIVE

- To make the student acquire practical skills in the wet chemical and instrumental methods for quantitative estimation of nitrite in water, cement, oil, coal, Phenol

LIST OF EXPERIMENTS (Any ten experiments)

1. Determination of Redwood / Saybolt numbers, kinematic viscosity and viscosity index of lubricating oils
2. Determination of flash point, fire point, cloud and pour point of oils
3. Determination of acid value, iodine value of oils and saponification value.
4. Determination of COD of water samples
5. Determination of total, temporary & permanent hardness of water by EDTA method.
6. Estimation of HCl using Na_2CO_3 as primary standard and determination of alkalinity in water sample.
7. Determination of purity of washing soda and strength of a commercial acid
8. Estimation of available chlorine in hypochlorite solution
9. Estimation of strength of hydrogen peroxide
10. Estimation of Phenol.
11. Determination of Calorific value using Bomb calorimeter

TOTAL: 60 PERIODS

OUTCOME:

- Familiarization with equipment like viscometers, flash and fire point apparatus etc
- Familiarization of methods for determining COD
- Familiarization of a few simple synthetic techniques for soap

TEXT BOOKS

1. Daniel R. Palleros, "Experimental organic chemistry" John Wiley & Sons, Inc., New York, 2001.
2. Furniss B.S. Hannaford A.J, Smith P.W.G and Tatchel A.R., Vogel's Textbook of practical organic chemistry, LBS Singapore, 2010.

MA8391 PROBABILITY AND STATISTICS L T P C
4 0 0 4

OBJECTIVE:

- This course aims at providing the required skill to apply the statistical tools in engineering problems.
- To introduce the basic concepts of probability and random variables.
- To introduce the basic concepts of two dimensional random variables.
- To acquaint the knowledge of testing of hypothesis for small and large samples which plays an important role in real life problems.
- To introduce the basic concepts of classifications of design of experiments which plays very important roles in the field of agriculture and statistical quality control.

UNIT I PROBABILITY AND RANDOM VARIABLES 12

Probability – The axioms of probability – Conditional probability – Baye's theorem - Discrete and continuous random variables – Moments – Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential and Normal distributions.

UNIT II TWO - DIMENSIONAL RANDOM VARIABLES 12

Joint distributions – Marginal and conditional distributions – Covariance – Correlation and linear regression – Transformation of random variables – Central limit theorem (for independent and identically distributed random variables).

UNIT III TESTING OF HYPOTHESIS 12

Sampling distributions - Estimation of parameters - Statistical hypothesis - Large sample tests based on Normal distribution for single mean and difference of means -Tests based on t, Chi-square and F distributions for mean, variance and proportion - Contingency table (test for independent) - Goodness of fit.

UNIT IV DESIGN OF EXPERIMENTS 12

One way and Two way classifications - Completely randomized design – Randomized block design – Latin square design - 2^2 factorial design.

UNIT V STATISTICAL QUALITY CONTROL 12

Control charts for measurements (X and R charts) – Control charts for attributes (p, c and np charts) – Tolerance limits - Acceptance sampling.

TOTAL: 60 PERIODS

OUTCOMES:

Upon successful completion of the course, students will be able to:

- Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
- Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
- Apply the concept of testing of hypothesis for small and large samples in real life problems.
- Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.
- Have the notion of sampling distributions and statistical techniques used in engineering and management problems.

TEXT BOOKS:

1. Johnson, R.A., Miller, I and Freund J., "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2015.

2. Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4th Edition, 2007.

REFERENCES:

1. Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
2. Papoulis, A. and Unnikrishnapillai, S., "Probability, Random Variables and Stochastic Processes", McGraw Hill Education India, 4th Edition, New Delhi, 2010.
3. Ross, S.M., "Introduction to Probability and Statistics for Engineers and Scientists", 3rd Edition, Elsevier, 2004.
4. Spiegel. M.R., Schiller. J. and Srinivasan, R.A., "Schaum's Outline of Theory and Problems of Probability and Statistics", Tata McGraw Hill Edition, 2004.
5. Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "Probability and Statistics for Engineers and Scientists", Pearson Education, Asia, 8th Edition, 2007.

FT8301 TECHNOLOGY OF SPINNING PROCESSES L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to understand various processes involved in conversion of fibre to yarn by ring spinning system and other modern spinning systems.

UNIT I OPENING AND CLEANING 9

Linear density systems for textile materials; Ginning – objectives, types, working principle and ginning performance on yarn quality; opening and cleaning – objectives of blow room machines, principle of opening, cleaning and blending machines, contamination clearers and safety devices; chute feed system

UNIT II CARDING AND DRAWING 9

Carding – objectives, principles of carding, working of carding machine; drawing machine – objectives, drafting system – types and applications, principles of auto levellers

UNIT III COMBING AND ROVING 9

Comber preparation – objectives, principles of sliver lap ribbon lap and super lap formers; comber - principle of combing, sequence of combing operation; roving machine – objectives, working principle and operation

UNIT IV RING SPINNING AND YARN PLYING 9

Ring spinning machine – objectives, working principle and operation; condensed yarn spinning – principles, merits; two-folding of yarns –package preparation, working principle, resultant count calculation; fancy yarn – types, method of production and applications

UNIT V NEW SPINNING PROCESS 9

Principles of yarn formation and material flow – rotor, friction, air-jet and air vortex spinning machines ; core, wrap spinning system, comparison of yarn properties

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall understand

- Process sequence for producing different types of yarns
- Principle of machines used for production of yarn

TEXT BOOKS:

1. Klein W., "The Technology of Short-staple Spinning", The Textile Institute, Manchester, 1998.
2. Oxtoby E., “Spun Yarn Technology “, Butterworth, London, 1987, ISBN: 0408014644 /ISBN- 13: 9780408014649.

REFERENCES:

1. Klein W., “The Rieter Manual of Spinning, Vol.1”, Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-1-4 / ISBN 13 978-3-9523173-1-0.
2. Klein W., “The Rieter Manual of Spinning, Vol.2”, Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-2-2 / ISBN 13 978-3-9523173-2-7.
3. Klein W., “The Rieter Manual of Spinning, Vol.3”, Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-3-0 / ISBN 13 978-3-9523173-3-4
4. Klein W., and Stalder H., “The Rieter Manual of Spinning", Vol.4, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-4-9 / ISBN: 13 978-3-9523173.
5. Ernst H., “The Rieter Manual of Spinning", Vol.5, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-5-7 / ISBN: 13 978-3-9523173-5-8
6. Stalder H., “The Rieter Manual of Spinning", Vol.6, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-6-5 / ISBN: 13 978-3-9523173-6-5.
7. Thomas Weide, “The Rieter Manual of Spinning", Vol.7, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-7-3 / ISBN: 13 978-3-9523173-7-2.
8. Lord P. R., “Yarn Production: Science, Technology and Economics”, The Textile Institute, Manchester, 2003, ISBN: 1855736969 | ISBN-13: 9781855736962
9. Doraiswamy I., Chellamani P., and Pavendhan A., “Cotton Ginning, Textile Progress”, The Textile Institute, Manchester, 1993, ISBN: 1870812484 / ISBN: 978-1870812481.
10. Salhotra K. R., and Ishtiaque S. M., “Rotor Spinning; its Advantages”, Limitations and Prospects in India, ATIRA, Ahmedabad, 1995
11. Trommer G., “Rotor Spinning”, Meliand Textile benchte GmbH, Rohrbacher, 1995, ISBN: 3871505099 | ISBN-13: 9783871505096
12. Lawerence C. A., and Chen K. Z., “Rotor Spinning”, Textile Progress, The Textile Institute, Manchester, 1984, ISBN: 0900739681 / ISBN: 978-0900739682

TT8351 CHARACTERISTICS OF TEXTILE FIBRES L T P C
4 0 0 4

OBJECTIVES:

To enable the students to understand the

- Structure and morphology of textile fibres
- Physical characteristics textile fibres

UNIT I STRUCTURE AND MORPHOLOGY 18

Classification of fibres; study of morphological structures of fibers; physical properties of fibres. order and disorder in fibre structure; molecular conformations – planar zig-zag, helical, lamellar, and sphrulite conformations; Transmission and Scanning electron microscopes-principle; construction and working; X-ray diffraction techniques – estimation of crystallinity; Infrared radiation and dichroism techniques; chemical element and group identification by transmittance and optical density methods, molecular orientation estimation

UNIT II MOISTURE ABSORPTION CHARACTERISTICS 12

Theories of moisture sorption; Moisture absorption behavior of natural and man-made fibres; influence of fibre structure, humidity and temperature on the moisture absorption; conditioning of fibres –mechanism of conditioning and factors influencing conditioning. Moisture diffusion in fibres. Heat of sorption – integral and differential, their relation; factors influencing heat of sorption - measurement of heat of sorption

UNIT III TENSILE CHARACTERISTICS 18

Tensile characteristics –study of strength, elongation, work of rupture, initial modulus, work factor and yield point – determination of yield point. Stress-strain relations of natural and manmade fibres - influence of fibre structure, humidity and temperature on tensile characteristics. Time effects Study of creep phenomena. Elastic recovery and its relation to stress and strain of fibres; mechanical conditioning of fibres and its influence on elastic recovery. Load cycling and extension cycling-their effect on elastic recovery. Introduction about torsional and flexural rigidity of fibers

UNIT IV OPTICAL AND FRICTIONAL CHARACTERISTICS 6

Reflexion and Lustre-objective and subjective methods of measurement - refractive index and its measurement - birefringence, factors influencing birefringence - Absorption and dichroism Friction – static, limiting and kinetic friction, its measurement, comparison of fibres, directional friction in wool – friction.

UNIT V THERMAL CHARACTERISTICS 6

Thermal transitions of fibres - thermal conductivity, thermal expansion and contraction, Tg, melting; static electricity in textile fibres

TOTAL:60 PERIODS

OUTCOMES:

Upon completion of this course, the student shall be able to

- Correlate the physical properties of fibre to its microstructure and its influence on other characteristics
- Choose appropriate fibre for the required property

TEXT BOOKS:

1. Morton W. E., and Hearle J. W. S., “Physical Properties of Textile Fibres”, The Textile Institute, Washington D.C., 2008, ISBN 978-1-84569-220-95
2. Meredith R., and Hearle J. W. S., “Physical Methods of Investigation of Textiles”, Wiley Publication, New York, 1989, ISBN: B00JCV6ZWU | ISBN-13:

3. Mukhopadhyay S. K., “Advances in Fibre Science”, The Textile Institute,1992, ISBN: 1870812379
4. Meredith R., “Mechanical Properties of Textile Fibres”, North Holland, Amsterdam, 1986, ISBN: 1114790699, ISBN-13: 9781114790698

REFERENCES:

1. Hearle J. W. S., Lomas B., and Cooke W. D., “Atlas of Fibre Fracture and Damage to Textiles”, The Textile Institute, 2nd Edition, 1998, ISBN: 1855733196.
2. Raheel M. (ed.)., “Modern Textile Characterization Methods”, Marcel Dekker, 1995, ISBN:0824794737
3. Mukhopadhyay. S. K., “The Structure and Properties of Typical Melt Spun Fibres”, Textile Progress, Vol. 18, No. 4, Textile Institute, 1989, ISBN: 1870812115
4. Hearle J.W.S., “Polymers and Their Properties: Fundamentals of Structures and Mechanics Vol 1”, Ellis Horwood, England, 1982, ISBN: 047027302X | ISBN-13: 9780470273029 36
5. Greaves. P. H., and Saville B.P., “Microscopy of Textile Fibres”, Bios Scientific, U.K., 1995, ISBN: 1872748244 | ISBN-13: 9781872748245
6. Seville. B. P., “Physical Testing of Textiles”, Woodhead Publishing, 1999,ISBN: 1855733676 | ISBN-13: 9781855733671
7. Hearle J. W. S., and Peters. R. H., “Fibre structure”, Elsevier Ltd, 1963, ISBN: 1483212211 | ISBN-13: 9781483212210

FT8302 PATTERN ENGINEERING I L T P C
3 0 0 3

OBJECTIVE:

- To introduce students to human anthropometrics from the scientific and technological viewpoint
- To equip students with comprehensive pattern making skills

UNIT I BASICS OF ANTHROPOMETRICS AND SIZING SYSTEMS 12

Anthropometry- Basic measurements, Human Anatomy, Landmark terms, clothing sizing systems, Body ideals-Eight head theory: body proportions, height and weight distribution.

UNIT II STUDY OF BODY MEASUREMENTS 6

Important body measurements across all age groups, Methods of measuring body dimensions, Standard measurement chart-designation and control dimensions.

UNIT III BASICS OF PATTERN MAKING 9

Functions of pattern making tools, Preparing and Measuring the Form, Trueing, blending, pattern grain line, balance line terms, notches, seam allowance, jog seam, dart points, pleats, flares, gather and true bias.

UNIT IV BASIC PATTERN SET 9

Pattern making - Drafting and draping methods. Basic men’s and women’s block.

UNIT V PRINCIPLES OF PATTERN MAKING 9

Dart manipulation- single dart series-slash-spread technique, pivotal transfer technique. Two dart series- slash spread and pivotal transfer technique. Graduated and radiating darts. Parallel, asymmetric and intersecting darts. Types of added fullness and Contouring Principle.

TOTAL: 45 PERIODS

OUTCOME:

- The course would help the students to develop better understanding on how clothing should be designed, so as to provide not only good fit but also enhance body image

TEXT BOOKS:

1. Fan J, Yu W, and Hunter L., "Clothing Appearance and Fit: Science and Technology", Wood head Publishing Limited, 2004.
2. Ashdown S. P., "Sizing in Clothing", Wood head Publishing Limited, 2007.

REFERENCES:

1. Winifred Aldrich, "Metric Pattern Cutting for Children's Wear and Baby Wear", Blackwell Publishings, 2009.
2. Helen Joseph, Armstrong, "Patternmaking for Fashion Design", Pearson Education Pte. Ltd.,2005.

FT8303 FUNDAMENTALS OF GARMENT MANUFACTURING L T P C
2 0 0 2

OBJECTIVE:

- To introduce briefly the fundamentals of garment manufacture to the students

UNIT I **6**

Introduction to Indian apparel industry; Anthropometry- definition and tools, Specification sheet, technical pack; Structure of an apparel industry-work flow, Pre production planning; types of samples and sample approval;

UNIT II **6**

Objectives and requirements of spreading, marker planning, marker efficiency, cutting.

UNIT III **12**

Stitch types and uses; seam types and uses; stitch and seam identification; characteristics of sewing threads; elements and functions of SNLS machine and working aids

UNIT IV **6**

Garment accessories, trims and components; fusing requirements and process; Objectives of pressing and packing

TOTAL: 30 PERIODS

OUTCOME:

- Upon completion of this course, the students shall understand fundamental aspects of production of garment and various processes involved

TEXT BOOKS:

1. Harrold Carr., and Barbara Latham., "The Technology of Clothing Manufacture" Backwell Science, U.K., 1994,ISBN: 0632037482 | ISBN-13: 9780632037483.
2. Gerry Cooklin., Steven George Hayes., and John McLoughlin., "Introduction to Clothing Manufacture", Wiley-Blackwell Science, U.K., 2006, ISBN: 0632058463 | ISBN-13:9780632058464.

REFERENCES:

1. Richard M. Jones., “The Apparel Industry”, Blackwell Science, U.K., 2006, ISBN: 1405135999 |ISBN-13: 9781405135993.
2. Kantilal Ila., “Apparel Industry in India”, NICTAS Publication, Ahmedabad, 1990,ISBN:8185472009 | ISBN-13: 9788185472003.
3. Raj kishore Nayak., and Rajiv Pandhya.,”Garment Manufacturing Technology”, Woodhead publications 2015, ISBN: 1782422323 | ISBN-13: 9781782422327.
4. ChutterA. J., “Introduction to Clothing Production Management”, Wiley-Blackwell Science, U.K., 1995, ISBN: 0632039396 | ISBN-13: 9780632039395.
5. Harold Carr, “The Clothing Factory”, Clothing and Footwear Institute, 1972. ISBN: B0012PP566.
6. Miller E., “Textile Properties and Behaviour in Clothing use”, Batsford Publication, 1992, ISBN:0713472359 | ISBN-13: 9780713472356.
7. Cooklin G., “Fusing Technology”, The Textile Institute, Manchester, 1990, ISBN: 1870812204 |ISBN-13: 9781870812207.
8. Jay Diamond., “Fashion Apparel and Accessories”, Delmar Publication, 1994, ISBN: 0827356242 | ISBN-13: 9780827356245.

FT8304 FASHION EVOLUTION L T P C

3 0 0 3

OBJECTIVE:

- To acquaint the student with the history of fashion, its elements, traditional costumes, accessories and embellishments.

UNIT I **9**

History of fashion – Elements of Fashion. Fashion cycles – length of cycles. The psychology of clothing – factors influencing fashion. Adoption of fashion – traditional- modern, Fashion categories.

UNIT II **9**

Indian garments from ancient to modern times. Traditional Indian textiles – Motifs, colour combinations, designs. Accessories and embellishments.

UNIT III **9**

History of western costumes. Greek and Persian influence on fashion. English, American and French costumes. Silhouette, Headgears, Clothing styles and embellishments.

UNIT IV **9**

African and European traditional costumes, colour combination, designs, motifs and accessories.

UNIT V **9**

Traditional costumes of Asian countries, colour combination, designs, motifs and accessories.

TOTAL: 45 PERIODS

OUTCOME:

- Upon completion of the course, the student would develop an understanding of fashion evolution and fashion designing

TEXT BOOKS:

1. Vandana Bhenderi, “Costume, Textiles and Jewellery of India – Traditions in Rajasthan”, Prakash Books, New Delhi, 2004.
2. Fillow J and Bernard N Thomas and Hudson, “Traditional Indian Textiles”, Prentice Hall, India,1993.

REFERENCES:

1. Hart A North S V and A Museum, “Historical Fashion in detail the 17th and 18th Centuries”, McMillan, India, 1998.
2. Kathy Alert, "Traditional folk costumes of Europe paper dolls in full color”, Dover publications, Inc., Newyork,1984.

EE8362 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY L T P C
0 0 4 2

OBJECTIVES:

- To determine characteristics of electrical apparatus and electronic devices by conducting suitable experiments.

LIST OF EXPERIMENTS

1. Verification of Ohm’s law and Kirchhoff’s laws.
2. Measurement of three phase power
3. Load test on DC shunt motor.
4. Load test on single -phase Transformer
5. Load test on separately excited DC generator
6. Study of half wave and full wave rectifiers.
7. RC coupled transistor amplifier.
8. Study of logic gates and implementation of Boolean functions.
9. Implementation of binary adder/ subtractor.
10. Study of modulation and demodulation principles
11. Study of communication systems
12. Study of ADC and DAC circuits

Minimum of 10 Experiments to be carried out :-

TOTAL : 60 PERIODS

OUTCOMES:

- Understanding the relation between electrical voltage, current and resistance.
- Ability to measure the performance of electrical machine like DC and AC motors.
- Visualizing the usage of logic gates and Microprocessor in motor control systems.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS

S. No.	NAME OF THE EQUIPMENT	Qty.
1.	D. C. Motor Generator Set	2
2.	D.C. Shunt Motor	2
3.	Single Phase Induction Motor	2
4.	Ammeter A.C and D.C	20
5.	Voltmeters A.C and D.C	20
6.	Watt meters LPF and UPF	12
7.	Resistors & Breadboards	-
8.	Cathode Ray Oscilloscopes	4
9.	Dual Regulated power supplies	6
10.	A.C. Signal Generators	4
11.	Communication system demonstration kits	2
12.	Modulation and demodulation demo kits	2
13.	ADC and DAC circuit demo kits	2

FT8311 **FASHION ILLUSTRATION LABORATORY** **L T P C**
0 0 4 2

OBJECTIVE:

- To train the students in fashion illustration

LIST OF EXPERIMENTS

1. Drawing different objects.
2. Sketching of Ideal figure.
3. Sketching silhouette of human body.
4. Creating garment designs.
5. Proportions and style line illustrations.

All the experiments are in variants.

TOTAL: 60 PERIODS

OUTCOME:

- Upon completion of this practical course, the student would be able to sketch human body, ideal figures and create garment designs.

LIST OF EQUIPMENT REQUIRED FOR 30 STUDENTS

- Drawing tables - 15 Nos.

FT8312 **PATTERN ENGINEERING LABORATORY I** **L T P C**
0 0 4 2

OBJECTIVE:

- To train the students in pattern making of apparels.

LIST OF EXPERIMENTS

1. Measuring the Form – Male, female and child.
2. Formulating standard measurement chart.
3. Drafting the basic pattern set using the above measurement chart.
4. Single dart series slash spread technique
5. Single dart series pivotal transfer technique
6. Double dart series slash spread technique
7. Double dart series pivotal transfer technique.
8. Graduated and radiating darts.
9. Pleat tuck and pin tuck.

TOTAL: 60 PERIODS

OUTCOME:

- Upon completion of this practical course, the student would have practical experience on pattern making of garments

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

- Working surface – pattern making / cutting table (polished or laminated top) – 5 Nos.
- Rulers – 12” and 36” – 15 Nos.
- Tailor’s square – 24” x 14” – 15 Nos.
- Curve rules – French curves, hip curves and vary form curve – 15 Nos.
- Pattern notcher, tracing wheel, awl – 5 Nos.
- Measuring tape – 30 Nos.
- Pattern weights – 10 Nos.
- Dress forms (Full and Half) – Men, Women and children – 1 set each

HS8381	INTERPERSONAL SKILLS/LISTENING AND SPEAKING	L	T	P	C
		0	0	2	1

OBJECTIVES: The Course will enable learners to:

- Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills.
- Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
- improve general and academic listening skills
- Make effective presentations.

UNIT I

Listening as a key skill- its importance- speaking - give personal information - ask for personal information - express ability - enquire about ability - ask for clarification Improving pronunciation - pronunciation basics taking lecture notes - preparing to listen to a lecture - articulate a complete idea as opposed to producing fragmented utterances.

UNIT II

Listen to a process information- give information, as part of a simple explanation - conversation starters: small talk - stressing syllables and speaking clearly - intonation patterns - compare and contrast information and ideas from multiple sources- converse with reasonable accuracy over a wide range of everyday topics.

UNIT III

Lexical chunking for accuracy and fluency- factors influence fluency, deliver a five-minute informal talk - greet - respond to greetings - describe health and symptoms - invite and offer - accept - decline - take leave - listen for and follow the gist- listen for detail

UNIT IV

Being an active listener: giving verbal and non-verbal feedback - participating in a group discussion - summarizing academic readings and lectures conversational speech listening to and participating in conversations - persuade.

UNIT V

Formal and informal talk - listen to follow and respond to explanations, directions and instructions in academic and business contexts - strategies for presentations and interactive communication - group/pair presentations - negotiate disagreement in group work.

TOTAL: 30 PERIODS

OUTCOMES: At the end of the course Learners will be able to:

- Listen and respond appropriately.
- Participate in group discussions
- Make effective presentations
- Participate confidently and appropriately in conversations both formal and informal

TEXT BOOKS:

1. **B**rooks, Margret. **Skills for Success. Listening and Speaking**. **Level 4** Oxford University Press, Oxford: 2011.
2. Richards, C. Jack. & David Bholke. **Speak Now Level 3.** Oxford University Press, Oxford: 2010

REFERENCES

1. Bhatnagar, Nitin and MamtaBhatnagar**. Communicative English for Engineers and Professionals.** Pearson: New Delhi, 2010.
2. Hughes, Glyn and Josephine Moate**. Practical English Classroom.** Oxford University Press: Oxford, 2014.
3. Vargo, Mari**. Speak Now Level 4.** Oxford University Press: Oxford, 2013.
4. Richards C. Jack. **Person to Person (Starter).** Oxford University Press: Oxford, 2006.
5. Ladousse, Gillian Porter**. Role Play.** Oxford University Press: Oxford, 2014

FT8401 TEXTILE CHEMICAL PROCESSING L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to learn about pre-treatments involved in the wet processing of textiles, dyeing and printing of textiles

UNIT I **5**

Operation sequence in chemical processing of cotton, silk, wool, rayon, polyester, polyamide, polyester and cellulosic blend materials with emphasis on the objectives of each operation

UNIT II **9**

Scouring; bleaching and mercerization of cotton; preparatory process for wool and silk

UNIT III **9**

Stages involved in dyeing process, principle of application of direct, reactive, vat, acid, disperse and natural dyes; principles of working of loose fibre, yarn and fabric processing machines.

UNIT IV **13**

Printing methods and styles of printing; general constitution of printing paste, printing with pigments, principles of transfer and ink-jet printing, dyeing and printing faults, assessment of fastness properties of dyed and printed goods ; garment dyeing and washing ; Finishing - Calendering, shrink proofing, antistatic finish, softening, water and flame proofing, UV protection, antimicrobial finish, resin finishing – crease recovery, wash and wear and durable press finishes; Standard methods of assessment of all the above finishes.

UNIT V **9**

Fundamentals of colour science, assessment of colour of dyed and printed goods; basics of colour matching technique; assessment of whiteness and yellowness indices and colour difference; pass/fail decision making; Eco friendly chemical processes, banned dyes and chemicals.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the students will have knowledge on

- Chemical finishing treatment of textile materials
- Dyeing and printing of garments
- Eco friendly chemical processes

TEXT BOOKS:

1. Trotman E. R., “Dyeing and Chemical Technology of Textile Fibres”, B.I Publishing Pvt. Ltd., New Delhi, 1994, ISBN: 0471809101 | ISBN-13: 9780471809104

2. Karmarkar S.R., “Chemical Technology in Pre-treatment processes of Textiles”, Elsevier Publications, Newyork,1999, ISBN: 044450060X | ISBN-13: 9780444500601
3. Shenai V. A., “Chemistry of Dyes and Principles of Dyeing”, Sevak Publications, Mumbai, 1995, ISBN: B0007BFE9Y.
4. Shenai V. A., “Technology of Printing”, Sevak Publications, Mumbai, 1996
5. Miles W. C., “Textile Printing”, Wood head Publication, 2003, ISBN 0 901956 76 1

REFERENCES:

1. Hall A.J., “Textile Finishing”, 2nd ed., McGraw Hill, 1995.
2. Marsh J.T., “Introduction to Textile Finishing” Vol. II, New Age, 1996
3. Heywood D.,”Textile Finishing”, Woodhead Publishing Ltd.,2003 ISBN 090195681
4. Shenai V.A., “Technology of Finishing”, Vol. X, Usha, 1998
5. Schindler W.D and Hauser P., “Chemical Finishing of Textiles”, Wood head Publications, ISBN: 1855739054.
6. Yin-Ling Lam , Chi-Wai Kan & Chun-Wah Marcus Yuen, "Developments in functional finishing of cotton fibres – wrinkle-resistant, flameretardant and antimicrobial treatments", Textile Progress, Vol. 44, Nos. 3 - 4, September-December 2012,175–249.
7. Jones B. W., “Garment Dyeing: Ready to Wear Fashion from the Dyehouse”, Textile Progress, Vol. 19, No. 2, 1988, ISBN 1870812131.
8. Roshan Paul (Ed.), "Denim – Manufacture, Finishing and Applications", Woodhead Publishing, 2015.
9. Reife A. and Freeman H.S., “Environmental Chemistry of Dyes and Pigments”, Wiley, 1996, ISBN: 0471589276

FT8402 PATTERN ENGINEERING II L T P C
3 0 0 3

OBJECTIVES:

- To impart knowledge on patterns for different types of collars and sleeves.
- To instruct on various styles of pockets and facings.
- To impart knowledge on patterns for top, bottom, knits, action wear and swim wear.
- To impart knowledge on pattern alterations and grading.

UNIT I PATTERNS FOR COLLARS AND SLEEVES 9

Collar classification and terms, basic shirt collar, Peter Pan collar, sailor collar, mandarin collar, built-up neck lines, Cowls, Sleeve cap, sleeve cuffs, puff, petal, lantern and leg-of-mutton sleeves.

UNIT II PATTERNS FOR POCKET, PLACKET AND FACINGS 6

Pocket classification, outside pockets, inserted pocket and side-seam pocket. Pointed, Slit opening and Wing collar plackets. Facing patterns for cutout necklines and armholes.

UNIT III FOUNDATIONS FOR TOPS AND BOTTOM WEAR 12

Basic shirt foundation-Front bodice draft, back bodice draft, sleeve draft, adding seam allowance and pattern information. Kimono, Raglan foundation. Pant foundation- front and back, waist band. Jean foundation, Pant derivatives, Pattern for princess line foundation, strapless princess bodice foundation.

UNIT IV PATTERN FOR KNITS, ACTION WEAR AND SWIMWEAR 9

Knit top foundations, Bodysuit foundations and variations. Swimwear–Maillot, bikini, little-boy, and full-figure swim foundations. Pattern for Bias-cut dresses. Jacket and Coat foundations.

UNIT V PATTERN ALTERATIONS AND GRADING 9

Pattern alteration for fit, Factors affecting the pattern making process. Grading process, grade rules, and types of grading system.

TOTAL: 45 PERIODS

OUTCOMES:

After successful completion of this course, the students should be able to acquire knowledge on,

- Patterns for different types of collars and sleeves.
- Various styles of pockets and facings.
- Patterns for top, bottom, knits, action wear and swim wear.
- Pattern alterations and grading.

TEXT BOOKS:

1. Helen Joseph, Armstrong, “Patternmaking for Fashion Design”, Pearson Education Pte. Ltd., 2005.
2. Winifred Aldrich, “Metric Pattern Cutting for Children’s Wear and Baby Wear”, Blackwell Publishing, 2004.

REFERENCES:

1. Fan J, Yu W, and Hunter L., “Clothing Appearance and Fit: Science and Technology”, Wood head Publishing Limited, 2004
2. Ashdown S. P., “Sizing in Clothing”, Wood head Publishing Limited, 2007

TT8391 ENGINEERING MECHANICS FOR TEXTILE TECHNOLOGISTS L T P C
3 2 0 4

OBJECTIVE:

- To develop capacity to predict the effect of force and motion in the course of carrying out the design functions of engineering

UNIT I BASICS AND STATICS OF PARTICLES 15

Introduction – Units and Dimensions – Laws of Mechanics – Lami’s theorem, Parallelogram and triangular Law of forces –– Vectorial representation of forces – Vector operations of forces - additions, subtraction, dot product, cross product – Coplanar Forces – rectangular components – Equilibrium of a particle – Forces in space – Equilibrium of a particle in space – Equivalent systems of forces – Principle of transmissibility .

UNIT II EQUILIBRIUM OF RIGID BODIES 15

Free body diagram – Types of supports –Action and reaction forces –stable equilibrium – Moments and Couples – Moment of a force about a point and about an axis – Vectorial representation of moments and couples – Scalar components of a moment – Varignon’s theorem – Single equivalent force -Equilibrium of Rigid bodies in two dimensions – Equilibrium of Rigid bodies in three dimensions

UNIT III PROPERTIES OF SURFACES AND SOLIDS 15

Centroids and centre of mass– Centroids of lines and areas - Rectangular, circular, triangular areas by integration – T section, I section, - Angle section, Hollow section by using standard formula –Theorems of Pappus -Area moments of inertia of plane areas – Rectangular, circular,

triangular areas by integration – T section, I section, Angle section, Hollow section by using standard formula – Parallel axis theorem and perpendicular axis theorem –Principal moments of inertia of plane areas – Principal axes of inertia-Mass moment of inertia –mass moment of inertia for prismatic, cylindrical and spherical solids from first principle – Relation to area moments of inertia.

UNIT IV DYNAMICS OF BODIES 15

Displacements, Velocity and acceleration, their relationship – Relative motion – Curvilinear motion -Newton's laws of motion – Work Energy Equation– Impulse and Momentum – Impact of elastic bodies.

UNIT V FRICTION AND ELEMENTS OF RIGID BODY DYNAMICS 15

Friction force – Laws of sliding friction – equilibrium analysis of simple systems with sliding friction –wedge friction-. Rolling resistance -Translation and Rotation of Rigid Bodies – Velocity and acceleration – General Plane motion of simple rigid bodies such as cylinder, disc/wheel and sphere.

TOTAL: 75 PERIODS

OUTCOMES:

- Ability to explain the differential principles applies to solve engineering problems dealing with force, displacement, velocity and acceleration.
- Ability to analyse the forces in any structures.
- Ability to solve rigid body subjected to dynamic forces.

TEXT BOOKS:

1. Beer, F.P and Johnson Jr. E.R. "Vector Mechanics for Engineers (In SI Units): Statics and Dynamics", 8th Edition, Tata McGraw-Hill Publishing company, New Delhi (2004)
2. Vela Murali, "Engineering Mechanics", Oxford University Press (2010)

REFERENCES:

1. Hibbeller, R.C and Ashok Gupta, "Engineering Mechanics: Statics and Dynamics", 11th Edition, Pearson Education (2010).
2. Irving H. Shames and Krishna Mohana Rao. G., "Engineering Mechanics – Statics and Dynamics", 4th Edition, Pearson Education (2006).
3. J. L. Meriam and L.G.Kraige, "Engineering Mechanics - Statics - Volume 1, Dynamics Volume 2,Third Edition, John Wiley & Sons, (1993).
4. Rajasekaran, S and Sankarasubramanian, G., "Engineering Mechanics Statics and Dynamics", 3rd Edition, Vikas Publishing House Pvt. Ltd., (2005).

FT8403 GARMENT PRODUCTION MACHINERY L T P C
2 0 0 2

OBJECTIVES:

- To impart knowledge on the machineries and equipments used for garment production
- To instruct on latest developments in the garment production machineries.

UNIT I SPREADING MACHINES 6

Fabric inspection machines, Types of Fabric Packages. Types of Fabrics – One Way – Two Way Fabrics – Their effect on spreading. Methods of Fabric spreading. Spreading equipments. Marker planning, Marker efficiency, Factors affecting marker efficiency.

UNIT II CUTTING MACHINES 6

Introduction to cutting machines. Types and functions of cutting machines – straight knife, round knife, band knife cutting machines. Notches, drills, die cutting machines. Computerised cutting machines. Maintenance of cutting machines.

UNIT III SEWING MACHINES 9

Basic parts of sewing machine –primary and auxiliary parts and their functions. Bobbin case / Bobbin hook, Throat plate– Take up devices – Tensioners – Feed dog – Pressure foot. Types of needles – Parts of needles and their function. Needle finishes. Adjustments of Stand height – pedal – Needle Bar – Stitch length selection – Feed timing – Needle and Bobbin Thread Tension – Stitch cycle timing diagram; Basic parts and functions of chain stitching machine.

UNIT IV MULTI THREAD SEWING MACHINES 9

Over lock machines - Types of Over lock machines. Parts and their functions. Threading diagram for over lock machines. Stitch Cycle Diagram for over lock machines – Adjustment of Needle height, Feed dog height, angle, Differential feed ratio, Position of upper and lower knives, loopers. Defects and Remedies. Flat lock machines – Types. Parts and their functions. Threading diagram of flat lock machines – Stitch cycle diagram. Adjustment of parts – Needle height, feed dog height, differential feed ratio, loopers.

TOTAL: 30 PERIODS

OUTCOMES:

After successful completion of this course, the students should be able to,

- Acquire knowledge in different methods of spreading of fabrics with respect to type of fabric and to calculate the marker efficiency.
- Describe the basic principles of working of different types of cutting machineries used in apparel production.
- Develop skill in setting and adjustment parts of sewing machines.
- Develop skills for recognize various parts and their working principles in advanced garment sewing machines.
- Acquire knowledge on special machineries used in apparel production

TEXT BOOKS:

1. Harold Carr and Barbara Latham, The Technology of Clothing Manufacture, Om Book Service, 2002.
2. Shaeffer Claire, Sewing for the Apparel Industry, Prentice Hall, New Jersey, 2001.

REFERENCES:

1. Singer, "Sewing Lingerie", Cy DeCosse Incorporated, 1991.
2. Laing R.M. and Webster J, "Stitches and Seams", The Textile Institute, Manchester, 1999
3. Technical Advisory Committee of AAMA, "A New Look at Apparel Mechanization", 1978.
4. Jacob Solinger, Apparel Production Handbook, Reinhold Publications, 1998

FT8491 FABRIC MANUFACTURING L T P C

3 0 0 3

OBJECTIVES:

- To teach preparatory processes and machinery for weaving
- To teach weaving and non-woven technologies of fabric manufacturing and the machinery used.

UNIT I **9**

Purpose and types of cone winding machines- Yarn clearers -Mechanical, Electrical Pirn winding machine – Types – yarn faults. Warping & Sectional warping machines. Sizing – size ingredients.

UNIT II **18**

Basic concepts of looms. Types of Looms – handloom – power loom – Automatic looms. Primary motions of a loom. Basic Principles of Tappet looms, Dobby looms, Drop box Looms, Jacquard looms – Card cutting.

UNIT III **9**

Basic concepts of Shuttle less looms – Rapier, projectile and Air jet looms. Salient features. Analysis of fabric defects.

UNIT IV **9**

Non-Woven fabrics - Types – different methods of production of non wovens, Properties and application of non woven fabrics.

TOTAL: 45 PERIODS

OUTCOMES:

After successful completion of this course, the students should be able to acquire knowledge on,

- Processes and machinery for weaving,
- Warp & weft knitting and non-woven technologies of fabric manufacturing and the machinery used.

TEXT BOOKS:

1. Talukdar M.K., Sriramulu P.K. and Ajgaonkar D.B., "Weaving: Machines, Mechanisms, Management", Mahajan Publishers, Ahmedabad, 1998, ISBN: 81-85401-16-0
2. Marks R. and Robinson T.C., "Principles of Weaving", The Textile Institute, Manchester, 1989, ISBN: 0 900739 258

REFERENCES:

1. PR. Lord and Mohammed, "Weaving: Conversion of yarn to fabric", M.H.Merrine Publishing Co. Ltd., VK, 1998.
2. Spencer D.J., "Knitting Technology", Peramon press Oxford, 1982.
3. Russell S., "Hand Book of Nonwovens", Textile Institute, Manchester, 2004.
4. Paling D.F., "Warp Knitting Technology" Columbine Press Baxton, 1975.
5. W.S. Murphy, "Hand Book of Weaving", Abhishek Publications 2001.

FT8404 **GARMENT CONSTRUCTION I** **L T P C**

3 0 0 3

OBJECTIVES:

- To teach the students about types of seams and stitches, sewing threads & their quality.
- To impart knowledge on various garment parts and their variations.
- To impart knowledge on use of accessories for garments.

UNIT I SPREADING AND CUTTING **12**

Basics of fabric spreading, modes of spreading, different fabric packages, spreading tension, uniformity and alignment, woven fabric lay, knitted fabric lay, types of fabric lay, Lay planning principles. Marker making, principles of marker making, types of markers, marker planning and marker efficiency, and fabric design parameters on markers, matching and grain line. Fabric

cutting methods, latest fabric cutting equipments, and record keeping in cutting room, advancements in cutting room technology

UNIT II BASIC SEWING TECHNIQUES 9

Seams: Definition, Types of seams, seam quality, seam performance, factors to be considered in the selection of seam, seam finishes, seam defects. Stitches: Definition, stitch classes, stitch parameters, factors to be considered in the selection of stitches. Stitching defects. Sewing Thread: Types, construction, sewing thread quality, selection of sewing thread.

UNIT III GARMENT COMPONENTS FOR MEN'S AND WOMEN'S TOP 9

Men's and women's tops – basic bodice blocks, collars, sleeves, cuffs, plackets – types, pleats, gathers and darts, functional purpose of components in garment construction.

UNIT IV GARMENT COMPONENTS FOR MEN'S AND WOMEN'S BOTTOM 9

Men's and women's bottom – trousers basic blocks, pockets – side pocket, welt pocket, patch pocket, yoke, skirt basic blocks, waist bands, panels, other components in innerwear, functional purpose.

UNIT V ACCESSORIES 6

Labels, linings, interlinings, wadding, lace, braid, elastic, hook and loop fastening, shoulder pads, eyelets and laces, zip fasteners, buttons

TOTAL: 45 PERIODS

OUTCOMES:

After successful completion of this course, the students should be able to acquire knowledge on,

- Types of seams and stitches, sewing threads & their quality,
- Various garment parts and their variations,
- Use of accessories for garments.

TEXT BOOKS:

1. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications,1998
2. Carr H and Latham B., "The Technology of Clothing Manufacturing", Blackwell Science, U.K.,1994

REFERENCES:

1. Ruth E. Glock, Grace I. Kunz, "Apparel Manufacturing, Sewn Product Analysis", fourth edition, Pearson Education, ISBN: 8177580760159 4
2. Laing R.M., Webster J, "Stitches & Seams", The Textile Institute, India,1998
3. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001
4. Singer, "Sewing Lingerie", Cy De Cosse Incorporated, 1991.
5. Patty Brown & Janett Rice, "Ready-To-Wear Apparel Analysis'", Third Edition, PrienticeHall Inc., New Jersey,ISBN:0130254347

FT8411 PATTERN ENGINEERING LABORATORY II L T P C
0 0 4 2

OBJECTIVE:

- To train the students in pattern engineering of garments

LIST OF EXPERIMENTS

Development of patterns using drafting method of pattern making

1. Women - formal, casual and party wear

2. Men - formal, casual and party wear
3. Children - uniform, playtime wear and sleep suits.
4. Grading of patterns

Development of patterns using draping method of pattern making

1. Basic bodice – front and back
2. Bodice with dart variations
3. Gored, flared skirts, Jeans, jumpsuits
4. Sleeve's, collar (convertible, peter-pan collar, turtle neck collar, shawl collar).
5. Neckline cowl, side seam cowl, bias cowl.

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion of this practical course, the students will be able to

- Develop patterns for women's, men's and children's garments
- Do grading of patterns
- Develop patterns for basic bodice, gored, flared skirts, jeans and jumpsuits

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

- Working surface – pattern making / cutting table (polished or laminated top)- 5 no.
- Rulers – 12" and 36" - 15 no.
- Tailor's square – 24" x 14" - 15 no.
- Curve rules – French curves, hip curves and vary form curve - 15 no.
- Pattern notcher, tracing wheel, awl - 5 no.
- Measuring tape - 30 no.
- Pattern weights - 10 no.
- Dress forms (Full and Half) – Men, Women and Children– 1 set Each

FT8412	GARMENT CONSTRUCTION LABORATORY I	L	T	P	C
		0	0	4	2

OBJECTIVE:

- To train the students in fundamentals of garment construction.

LIST OF EXPERIMENTS

1. Stitch classification and stitch properties.
2. Formation of Stitch classes.
3. Seam classification and common uses.
4. Sewing practice of – superimposed seam, lapped seam, bound seam and flat seam.
5. Button hole and button stitch machine.
6. Study of Feed-of-the-arm machine.
7. Assembling of various garment components using appropriate seams.

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion of this practical course, the students will be able to

- Develop samples using various stitch classes and seams.
- Develop samples in various special machines.
- Develop various garment components.

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

High speed industrial sewing machines

- Single needle lock stitch machine - 15 Nos.

- Double needle lock stitch machine - 02 Nos.
- Over-lock machine - 02 Nos.
- Feed-of-the-arm machine - 01 No.
- Button stitch machine - 01 No.
- Button hole machine - 01 No.
- Flat lock machine - 01 No.
- Zigzag machine - 01 No.
- Straight knife cutting machine - 01 No.
- Steam pressing table (Desirable) - 01 No.

HS8461 ADVANCED READING AND WRITING

L	T	P	C
0	0	2	1

OBJECTIVES:

- Strengthen the reading skills of students of engineering.
- Enhance their writing skills with specific reference to technical writing.
- Develop students' critical thinking skills.
- Provide more opportunities to develop their project and proposal writing skills.

UNIT I

Reading - Strategies for effective reading-Use glosses and footnotes to aid reading comprehension- Read and recognize different text types-Predicting content using photos and title **Writing**-Plan before writing- Develop a paragraph: topic sentence, supporting sentences, concluding sentence –Write a descriptive paragraph

UNIT II

Reading-Read for details-Use of graphic organizers to review and aid comprehension **Writing**-State reasons and examples to support ideas in writing- Write a paragraph with reasons and examples- Write an opinion paragraph

UNIT III

Reading- Understanding pronoun reference and use of connectors in a passage- speed reading techniques-**Writing-** Elements of a good essay-Types of essays- descriptive-narrative-issue-based-argumentative-analytical.

UNIT IV

Reading- Genre and Organization of Ideas- **Writing-** Email writing- visumes – Job application-project writing-writing convincing proposals.

UNIT V

Reading- Critical reading and thinking- understanding how the text positions the reader-identify **Writing**- Statement of Purpose- letter of recommendation- Vision statement

TOTAL: 30 PERIODS

OUTCOMES: At the end of the course Learners will be able to:

- Write different types of essays.
- Write winning job applications.
- Read and evaluate texts critically.

- Display critical thinking in various professional contexts.

TEXT BOOKS:

1. Gramer F. Margot and Colin S. Ward **Reading and Writing (Level 3)** Oxford University Press: Oxford, 2011
2. Debra Daise, CharlNorloff, and Paul Carne **Reading and Writing (Level 4)** Oxford University Press: Oxford, 2011

REFERENCES

1. Davis, Jason and Rhonda LIss.**Effective Academic Writing (Level 3)** Oxford University Press: Oxford, 2006
2. E. Suresh Kumar and et al. **Enriching Speaking and Writing Skills.** Second Edition. Orient Black swan: Hyderabad, 2012
3. Withrow, Jeans and et al**. Inspired to Write. Readings and Tasks to develop writing skills.** Cambridge University Press: Cambridge, 2004
4. Goatly, Andrew**. Critical Reading and Writing.** Routledge: United States of America, 2000
5. Petelin, Roslyn and Marsh Durham**. The Professional Writing Guide: Knowing Well and Knowing Why.** Business & Professional Publishing: Australia, 2004

FT8501 GARMENT CONSTRUCTION II L T P C
3 0 0 3

OBJECTIVES:

- To teach the students about operation breakdown for various garments.
- To impart knowledge on various production systems and inspection.
- To impart knowledge on finishing of garments.

UNIT I **13**

Operation breakdown for shirts, trousers, jackets, waist coats, T shirts, casual bottoms, material flow, cut component progresses, machinery allocation, man power allocation.

UNIT II **14**

Operation breakdown for blouse variations, dresses, skirt variations, kameez, salwar, lingeries, material flow, cut component progresses, machinery allocation, man power allocation.

UNIT III **9**

Line set up, production line balancing, different production system, manual system, make through system, batch production system, progressive bundle system, straight line system, progressive bundle system, conveyor belt system, unit production system , modular production system, quick response system and Just in time system.

UNIT IV **9**

Raw material, in process and final inspection, analysis of sewing ability of fabrics, care labeling.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the students will be able to know,

- Operation breakdown for various mens's and women's garments
- Different manufacturing systems and inspection
- Garment dyeing and finishing

TEXT BOOKS:

1. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications,1998
2. Carr H and Latham B., “The Technology of Clothing Manufacturing”, Blackwell Science, U.K.,1994

REFERENCES:

1. Ruth E. Glock, Grace I. Kunz, “Apparel Manufacturing, Sewn Product Analysis”, fourth edition, Pearson Education, ISBN: 8177580760159
2. Laing R.M., Webster J, “Stitches & Seams”, The Textile Institute, India,1998
3. Shaeffer Claire, “Sewing for the Apparel Industry”, Prentice Hall, New Jersey, 2001
4. Singer, “Sewing Lingerie”, Cy De Cosse Incorporated, 1991.
5. Patty Brown & Janett Rice, “Ready-To-Wear Apparel Analysis’”, Third Edition, Prientice Hall Inc., New Jersey,ISBN:0130254347.
6. Ruth Glock, Grace I. Kunz, “Apparel Manufacturing”, Dorling Kindersley Publishing Inc., New Jersey, 1995, ISDN: 0-02-344142-9
7. Pradip V.Mehta, “An Introduction to Quality Control for the Apparel Industry”, J.S.N. Internationals, 1992

FT8502 KNIT FABRIC PRODUCTION L T P C
2 0 0 2

OBJECTIVES:

- To teach the students about introduction and classification of knitting process.
- To impart knowledge on principles of knitting and types of needles.
- To impart knowledge on weft and warp knitting.

UNIT I INTRODUCTION 3

Reasons for the growth of the knitting industry. Comparison of fabric properties - wovens, knits and bonded fabrics; classification of knitting processes – weft knit & warp knit; yarn quality requirements for knitting.

UNIT II FUNDAMENTALS OF KNITTING 6

General definitions and principles of knitting; Types of knitting needles – Bearded, Latch & Compound Needle. Elements of knitted loop structure.

UNIT III WEFT KNITTING 15

Basic weft knitted structures and their production - plain, rib, interlock and purl; Fundamentals of formation of knit, tuck and float stitches; factors affecting the formation of loop; effect of loop length and shape on fabric properties; Analysis of various types of weft knitted structure. Production of various weft knitted structures using flat knitting machines.

UNIT IV WARP KNITTING 6

Basic principles; elements of warp knitted loop – open loop, closed loop. Tricot and Rachel warp knitting machines. Warp knitted fabrics – Structures and End uses.

TOTAL: 30 PERIODS

OUTCOMES:

Upon completion of this course, the students will be able to know,

- basics of knitting and its principles
- basic principles of weft and warp knitting.

TEXT BOOKS:

1. Ajgaonkar D.B., “Knitting technology”, Universal Publishing Corporation, Mumbai, 1998, ISBN: 81-85027-34-X.
2. Chandrasekhar Iyer, Bernd Mammel and Wolfgang Schach., “Circular Knitting”, Meisenbach GmbH, Bamberg, 1995, ISBN: 3-87525-066-4.

REFERENCES:

1. Spencer D.J., “Knitting Technology”, III Ed., Textile Institute, Manchester, 2001, ISBN: 1 85573 333 1.
2. Samuel Raz., “Flat Knitting: The new generation”, Meisenbach GmbH, Bamberg, 1997, ISBN: 3-87525-054-0.
3. Samuel Raz., “Warp Knitting production”, Melliand Textilberichte, GmbH, Rohrbacher, 1987, ISBN: 3-87529-022-4

GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING L T P C
3 0 0 3

OBJECTIVES:

- To study the nature and facts about environment.
- To finding and implementing scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth‟s interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 14

Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION 8

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods,

earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III NATURAL RESOURCES 10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 7

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 6

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

TOTAL: 45 PERIODS

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

TEXT BOOKS:

1. Benny Joseph, "Environmental Science and Engineering", Tata McGraw-Hill, New Delhi, 2006.
2. Gilbert M. Masters, "Introduction to Environmental Engineering and Science", 2nd edition, Pearson Education, 2004.

REFERENCES:

1. Dharmendra S. Sengar, "Environmental law", Prentice hall of India Pvt Ltd, New Delhi, 2007.

2. Erach Bharucha, “Textbook of Environmental Studies”, Universities Press(I) PVT, LTD, Hydrabad, 2015.
3. Rajagopalan, R, "Environmental Studies-From Crisis to Cure", Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, “Environmental Science”, Cengage Learning India PVT, LTD, Delhi, 2014.

TT8681 TEXTILE CHEMICAL PROCESSING LABORATORY L T P C
0 0 4 2

OBJECTIVE:

- To train the students in pre treatment and wet processing of textile materials

LIST OF EXPERIMENTS

1. Desizing and scouring of cotton fabric.
2. Peroxide Bleaching of Cotton Yarn/Fabric.
3. Degumming of silk.
4. Identification of dyes
5. Dyeing of Cotton using Reactive dyes.
6. Dyeing of Cotton using Vat dye.
7. Dyeing of polyester using disperse dyes.
8. Dyeing of polyester and cotton blend
9. Determination of wash, light, perspiration and rubbing fastness of dyed fabrics.
10. Printing of cotton fabric using direct style.
11. Determination of Whiteness and Yellowness index
12. Determination of K/S of dyed fabrics using Spectrophotometer
13. Water proof and Flame retardant finishing of cotton.
14. Resin and softener finishes.
15. Antimicrobial Finish Evaluation

TOTAL: 60 PERIODS

OUTCOME:

- Upon completing this practical course, the student would be able to desize, bleach, dye, print and finish the fabric with different types of chemicals and colourants

LAB EQUIPMENTS

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

1. Stainless vats (500 ml)	-30 Nos.
2. Water bath	-2 Nos.
3. Stirrer	-1 No.
4. Steam ager	-1 No.
5. Pilot padding mangle	-1 No.
6. HTHP Beaker dyeing machine	-1 No.
7. Pilot curing chamber	-1 No.
8. Fastness tester for Washing, Light, Perspiration & Rubbing	-1 No.
9. Printing table	-1 No.
10. Spectrophotometer	-1 No.

FT8511 GARMENT CONSTRUCTION LABORATORY II L T P C
0 0 4 2

OBJECTIVE:

- To train the students in garment construction.

LIST OF EXPERIMENTS

1. Sewing and finishing of men's top wear.
2. Sewing and finishing of men's bottom wear.
3. Sewing and finishing of women's top wear.
4. Sewing and finishing of women's bottom wear.
5. Sewing and finishing of kid's wear (boy and girl).

TOTAL: 60 PERIODS

OUTCOME:

- Upon completion of this practical course, the students will be able to construct various garments for men, women and children.

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

- Single needle lock stitch machine – 15 Nos.
- Flat lock machine with elastic attachment – 1 No.
- Feed off the arm machine – 1 No.
- Over lock machine – 2 Nos.
- Button holing & button attachment machine – 1 No. each
- Cylinder bed Sewing machines – 1 No. (Preferable)
- Collar & Cuff recessing machine – 1 No. (Preferable)

TT8561 FABRIC ANALYSIS LABORATORY L T P C
0 0 4 2

OBJECTIVE:

- To train the students in analyzing the cloth to identify construction parameters and prepare design, draft and peg plan.

Analysis of construction details of the following fabric structure

1. Plain and its derivatives
2. Twill and its derivatives
3. Satin (Regular and irregular)
4. Sateen(Regular and irregular)
5. Honeycomb (ordinary and Brighton)
6. Huck-a-back
7. Extra warp and extra weft figuring
8. Pile fabrics (warp and weft)
9. Backed fabrics
10. Gauze and Leno
11. Double cloth
12. Crepe
13. Tapestry
14. Mock-leno
15. Bedford cord.
16. Single jersey
17. Double jersey structures
18. Analysis of blend composition in the yarn of the fabric

19. Analysis of finish on the fabric

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion of the lab the student will be able

- Identify the constructional parameters of fabric
- Construct design, draft and peg plan for weaving the fabric
- Analyse the blend composition of yarn used in the fabric and the type of finish applied in the fabric

LAB EQUIPMENTS

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

1. GSM Cutter – 3 Nos.
2. Beesley Balance – 2 Nos.
3. Crimp Tester – 2 Nos.
4. Electronic balance – 1 No.

HS8581	PROFESSIONAL COMMUNICATION	L T P C
		0 0 2 1

OBJECTIVES:

The couse aims to:

- Enhance the Employability and Career Skills of students
- Orient the students towards grooming as a professional
- Make them Employable Graduates
- Develop their confidence and help them attend interviews successfully

UNIT I

Introduction to Soft Skills-- Hard skills & soft skills - employability and career Skills—Grooming as a professional with values—Time Management—General awareness of Current Affairs

UNIT II

Self-Introduction-organizing the material - Introducing oneself to the audience – introducing the topic – answering questions – individual presentation practice— presenting the visuals effectively – 5 minute presentations

UNIT III

Introduction to Group Discussion— Participating in group discussions – understanding group dynamics - brainstorming the topic -– questioning and clarifying –GD strategies- activities to improve GD skills

UNIT IV

Interview etiquette – dress code – body language – attending job interviews– telephone/skype interview -one to one interview &panel interview – FAQs related to job interviews

UNIT V

Recognizing differences between groups and teams- managing time-managing stress- networking professionally- respecting social protocols-understanding career management-developing a long-term career plan-making career changes

TOTLA: 30 PERIODS

OUTCOMES:

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

- Make effective presentations
- Participate confidently in Group Discussions.
- Attend job interviews and be successful in them.
- Develop adequate Soft Skills required for the workplace

Recommended Software

1. Globearena
2. Win English

REFERENCES:

1. Butterfield, Jeff **Soft Skills for Everyone.** Cengage Learning: New Delhi, 2015
2. **Interact** English Lab Manual for Undergraduate Students,. OrientBalckSwan: Hyderabad, 2016.
3. E. Suresh Kumar et al. **Communication for Professional Success.** Orient Blackswan: Hyderabad, 2015
4. Raman, Meenakshi and Sangeeta Sharma. **Professional Communication**. Oxford University Press: Oxford, 2014
5. S. Hariharanetal. **Soft Skills**. MJP Publishers: Chennai, 2010.

FT8652 INDUSTRIAL ENGINEERING IN APPAREL INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about

- Basics of industrial engineering
- Different tools of industrial engineering and its application in apparel industry

UNIT I **5**

Industrial Engineering - evolution, functions, role of industrial engineer

UNIT II **13**

Methods study – introduction, techniques of recording; method analysis techniques; principles of motion economy; method study in garment manufacture; ergonomics- importance, workplace design, fatigue

UNIT III **13**

Work measurement – introduction; time study – equipment and procedure; standard data; predetermined time standards; work sampling techniques; incentive wage system; work measurement applied to garment industry

UNIT IV **5**

Site selection for textile industry; plant layout - types of layouts suitable for textile industry, methods to construct layout; line balancing

UNIT V **9**

Statistical Process Control – data collection; concept of AQL, control charts in quality control; process capability

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course the student will be able to apply the following methodologies in apparel industry.

- Method study, work measurement

- Layout study and line balancing
- Statistical process control

TEXT BOOKS:

1. Khanna O. P. and Sarup A., “Industrial Engineering and Management”, Dhanpat Rai Publications, New Delhi, 2005
2. George Kanwaty, “Introduction to Work Study", ILO, Geneva, 1989
3. Norberd Lloyd Enrick, “Industrial Engineering Manual for Textile Industry”, Wiley Eastern (P)Ltd., New Delhi, 1988
4. Enrick N. L., “Time study manual for Textile industry”, Wiley Eastern (P) Ltd., 1989

REFERENCES:

1. Chuter A. J., “Introduction to Clothing Production Management”, Black well Science, U. S. A., 1995
2. Richard I. Levin. and David S. Rubin., “Statistics for Management”, 7th Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 1997
3. David M. Levine, Timothy C. Krehbiel and Mark L. Berenson., “Business Statistics: A First Course”, Pearson Education Asia, New Delhi, 2nd Edition, 2000
4. Panneerselvam R., “Production and Operation Management”, Prentice Hall of India, 2002
5. Edward S. Buffa and Rakesh Sarin., “Modern Production and Operations Management”, John Wiley & Sons, U. S. A., 1987
6. Lee J. Krajewski and Larry P. Ritzman., “Operations Management: Strategy and Analysis”, Addison Wesley, 2000
7. Chase, Aquilano and Jacobs., “Production and Operations Management”, Tata McGraw-Hill, New Delhi, 8th Edition, 1999

FT8691 TEXTILE QUALITY EVALUATION L T P C
3 0 0 3

OBJECTIVE:

- To infuse understanding of yarn, fabric and apparel testing methods

UNIT I CONSTRUCTION CHARACTERISTICS 9

Basic fabric particulars – Measurement of ends and picks per inch, count of warp and weft, determination of the type of weave, measurement of length, width, thickness and Area density (GSM); warp and weft crimp measurements for spun and filament yarn fabrics, the cover factor calculations; Fabric sampling techniques

UNIT II STRENGTH CHARACTERISTICS 9

Tensile strength measurement – ravelled strip test and grab test – mechanical and electronic measuring systems. Tear strength – importance – measuring systems. Bursting strength and its measurement. Ballistic impact strength. Universal tensile tester - principle and operation

UNIT III COMFORT AND SURFACE CHARACTERISTICS 9

Fabric stiffness – principle of measurement of flexural rigidity; Drapeability – measurement of drape coefficient; Crease recovery measurement techniques. Wrinkle recovery assessment using standard grades; Principle and functioning of air permeability testers, water repellency, contact angle and fabric shrinkage testing; Fabric abrasion resistance – measuring technique;
Fabric pilling resistance – methods of determination.

UNIT IV SPECIAL CHARACTERISTICS 5

Fabric bending hysteresis testing; Shear hysteresis measurements; Fabric compression and decompression behaviour; Fabric surface roughness and friction measurements; Fabric tensile hysteresis measurements; Fabric flame resistance testing methods; Moisture and thermal characteristics.

UNIT V FABRIC AND GARMENT INSPECTION 13

Fabric inspection – Manual, semi-automatic and Automatic Inspection systems, classification of fabric defects, independent product quality certification, acceptable quality level, MIL standards and final inspection. Inspection of garments for defects - sewing, pressing,finishing and packaging defects.

TOTAL: 45 PERIODS

OUTCOMES:

The student will have knowledge on

- Methods by which the physical and mechanical properties of textile materials and products are measured and investigated
- Sampling and yarn quality parameters testing
- Fabric and garment quality parameters testing

TEXT BOOKS:

1. Booth J.E., “Principle of Textile Testing”, Butterworth Publications, London, 1989
2. Kothari V. K., “Testing and Quality Management”, Progress in Textile Technology Vol.1, IAFL Publications, New Delhi, 1999
3. Sara J. Kadolph., “Quality Assurance for Textiles and Apparels”, Fair Child Publications, New York, 1998

REFERENCES:

1. Saville,B.P. “Physical Testing of Textiles”, Woodhead Publishing Ltd., England,2004.
2. Grover E G and Hamby D. S “Hand Book of Textile testing and quality Control”, Wiley Eastern Pvt. Ltd., New Delhi, 1969.
3. Ruth clock and Grace Kunz., “Apparel Manufacture – Sewn Product Analysis”, Upper Sadle River Publications, New York, 2000
4. Pradip V. Mehta., “Managing Quality in the Apparel Industry”, NIFT Publication, India, 1998
5. Slater K., “Physical Testing and Quality Control”, The Textile Institute, Vol.23, No.1/2/3 Manchester, 1993
6. Arindam Basu, "Textile Testing-Fiber, Yarn & Fabric", SITRA, India, 2001.

FT8601 APPAREL PRODUCTION PLANNING AND PROCESS CONTROL L T P C
3 0 0 3

OBJECTIVES:

- To emphasis on the improved methods of material control in apparel production
- To acquaint student with quality concepts for implementing quality in apparel production

UNIT I 9

Control parameters and basic data of styles and generalised garment types, new program analysis, style wise design wise analysis on production parameters, product development and duplication. Concepts of concurrent engineering, reverse engineering, production planning and time and action calendar, steps between prototypes to approved sample-production sample, product data management and understanding specification sheets and effective communication.

UNIT II **9**

Operation break down and production sequence, identification of bottle necks and critical area, operation wise machinery allocation, usage of special attachments and tools for operation simplifications, production grid and flow chart.

UNIT III **9**

Cutting techniques, cutting room controls, lay lot planning, bundle distributions, modern methods in cut piece distribution and tracking different manufacturing systems, mass customisation and made to order manufacturing systems advantages disadvantages and control measures in sewing.

UNIT IV **9**

Production planning -Production floor balancing, line balancing, allocation of man power, production set up planning for a shirt factory, production set up planning for a bottoms and jacket factory, production set up planning for a fully integrated apparel manufacturing plant, conveyor system and control parameters.

UNIT V **9**

Quality control in product development, quality control in printing, embroidery, washing and other accessories, quality planning, preproduction meetings and quality procedures, production meetings, in line inspection, final inspection, rescreening conditions and final inspections. Packing-Ratio packing, solid packing, short shipment, excess shipment, calculation of volumetric weight, carton dimension other requirements.

TOTAL: 45 PERIODS

OUTCOME:

- The course will enable students to practise better methods in apparel production and planning to take informed business decisions in the apparel industry

TEXT BOOKS:

1. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998
2. Carr H and Latham B., “The Technology of Clothing Manufacturing”, Blackwell Science, U.K.,1994
3. Ruth E. Glock, Grace I. Kunz, “Apparel Manufacturing, Sewn Product Analysis”, Fourth Edition, Pearson Education.
4. Chuter A.J., “Introduction to Clothing Production Management”, Blackwell Scientific Publications, Oxford 2001.

REFERENCES:

1. Laing R.M., Webster J, “Stitches & Seams”, The Textile Institute, India, 1998
2. Shaeffer Claire, “Sewing for the Apparel Industry”, Prentice Hall, New Jersey, 2001
3. Singer, “Sewing Lingerie”, Cy DeCosse Incorporated, 1991
4. Patty Brown & Janett Rice, “Ready-To-Wear Apparel Analysis”, Third Edition, Prientice - Hall Inc., New Jersey.

FT8651 APPAREL MARKETING AND MERCHANDISING L T P C

3 0 0 3

OBJECTIVE:

- To acquaint the students of the concepts of business, merchandising, sourcing and export documentation

UNIT I INTRODUCTION TO APPAREL BUSINESS 9

International apparel business pattern, basic business concepts in Indian apparel export house, business operations in China and other south Asian countries. Business patterns for Indian apparel retail and home textiles. Understanding from concept board to finished product and its sequence.

UNIT II MARKETING FOR APPAREL AND TEXTILE PRODUCTS 9

Defining marketing, marketing mix the objectives of marketing department, market research, different types of markets, marketing strategies with respect to a product/brand, Indian apparel houses international marketing strategies and domestic marketing strategies, marketing models, B to B marketing, B to C marketing, direct marketing, digital marketing.

UNIT III MERCHANDISING 9

Concepts of merchandising, concepts and apparel product lines, dimensions of product change, determination and development of product line and product range. Creative and technical design in garments and accessories, new product development and seasons of sale, costing, coordination and communication with the production house and export house

UNIT IV SOURCING 9

Understanding the basics of sourcing, sourcing strategy and best sourcing practice in apparel and textile businesses, supply chain and demand chain understanding, sourcing negotiations, global co-ordination in sourcing, materials management and quality in sourcing, quick response and supplier partnership in sourcing, JIT technology.

UNIT V EXPORT DOCUM ENTATION AND POLICIES 9

Government policies a guide lines for apparel export and domestic trade, tax structures and government incentives in apparel trade. Export documents and its purposes, banking activities, Letter of credit, logistics and shipping, foreign exchange regulation, export risk management and insurance. Export finance, Special economic zones.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall be able to apply

- Concept of marketing and merchandizing in the apparel industry in India
- Procedure involved in the export of apparel

TEXT BOOKS:

1. Elian stone, Jean A samples, “Fashion Merchandising”, McGraw Hill Book Company, New York, 1985.
2. Philip Kotler, Kevin Lane Keller, Abraham Koshy, and Mithileshwar Jha , “Marketing Management A South Asian Perspective”, Pearson Education, New Delhi, 2006
3. Ruth E. Glock, Grace I. Kunz ” Apparel Manufacturing Sewn Product Analysis” Fourth Edition, Pearson Prentice Hall, NJ, 2005.

REFERENCES:

1. Shivaramu S., "Export Marketing – A Practical Guide to Exporters”, Wheeler Publishing, Ohio, 1996.
2. Warren. J. Keegan and Mark.C.Green , “Global Marketing”, Pearson Prentice Hall, New Delhi, 2005.

3. Grace I. Kunz , Ruth E. Glock, “Apparel Manufacturing: Sewn Product Analysis”, 4th Edition. Prentice Hall, 2004

TT8591 WOVEN FABRIC STRUCTURES L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to learn about structure of fabric and design the structure for different applications.

UNIT I **9**

Elementary weaves – plain and its derivatives, twill and its derivatives, satin, sateen and their derivatives – loom requirements

UNIT II **9**

Ordinary and Brighten Honey Comb; Huck-a-Back and its modifications; Mock Leno; crepe weaves; colour theory – light and pigment theory; modification of colour; application of colours; colour and weave effects – loom requirements

UNIT III **13**

Bedford cords - plain and twill faced, wadded; welts and piques, wadded piques; backed fabrics - warp and weft, reversible and non-reversible fabrics; extra warp and extra weft figuring - single and double colour – loom requirements

UNIT IV **9**

Pile fabrics; warp pile - wire pile, terry pile, loose backed; weft pile – plain back and twill back velveteen, lashed pile, corduroy, weft plush – loom requirements

UNIT V **5**

Double cloth, types of stitches; Damasks; Gauze and Leno principles – loom requirements, 3D woven structures.

TOTAL: 45 PERIODS

OUTCOMES:

Upon the completion of this course the student will be able to

- Understand different structures of woven fabric
- Design the structure for different end uses
- Construct the draft and peg-plan which are required to convert the design into fabric

TEXT BOOKS:

1. Grosicki Z. J., “Watson’s Textile Design and Colour”, Vol.1, Woodhead Publications, Cambridge England, 2004
2. Grosicki Z. J., “Watson’s Advanced Textile Design and Colour”, Vol.II, Butterworths, London, 1989

REFERENCES:

1. Wilson J., “Handbook of Textile Design”, Textile Institute, Manchester, 2001.
2. Horne C.E., “Geometric Symmetry in Patterns and Tilings”, Textile Institute, Manchester, 2000.
3. Seyam A. M., “Structural Design of Woven Fabrics, Theory and Practice”, Textile Institute, Manchester, 2002.
4. Georner D, “Woven Structure and Design, part 1: Single Cloth Construction”, WIRA, U.K., 1986
5. Georner D, “Woven Structure and Design, Part 2: Compound Structures”, WIRA, U.K.,1989

FT8611 FASHION DESIGN LABORATORY L T P C
0 0 4 2

OBJECTIVE:

- To train the students in fashion design.

DEVELOPMENT AND DESIGNING MEN'S WEAR FOR VARIOUS SEASONS AND ILLUSTRATIONS WITH FABRIC PATTERNS

1. Sketching with solid colors,
2. Sketching with stripes
3. Sketching with checks and plaids
4. Designing formal wear & work wear
5. Designing casual wear
6. Designing party wear

DEVELOPMENT AND DESIGNING WOMEN'S DRESSES FOR VARIOUS SEASONS AND ILLUSTRATION WITH FABRIC PATTERNS

1. Experiment on draping of fabrics in female dress form.
2. Sketching with colors and motifs
3. Designing formal wear & work wear
4. Designing casual wear
5. Designing party wear
6. Designing bridal wear
7. Designing functional and maternity dresses

CHILDREN DRESSING

1. Develop garment designs with comfort, fit and functionality
2. Sketching with colors and motifs
3. Designing casual wear
4. Designing uniforms

OUTCOME:

- Upon completion of this practical course, the student would be able to design men's, women's, children's garments.

TOTAL: 60 PERIODS

LAB EQUIPMENTS FOR A BATCH OF 30 STUDENTS

- Drawing tables - 15 Nos.

FT8661 TEXTILE QUALITY EVALUATION LABORATORY L T P C
0 0 4 2

OBJECTIVE:

- To make the students practically learn various fibre, yarn and fabric evaluation procedures to determine characteristics of fibres, yarn and fabric

LIST OF EXPERIMENTS

Determination of

1. Fibre fineness, length and maturity
2. Fibre trash content, Bundle fibre strength
3. Sliver/roving/ yarn linear density

4. Single yarn strength and Yarn Lea strength
5. Yarn single and ply yarn twist
6. Unevenness of yarn and assessment of yarn appearance
7. Fabric tensile strength
8. Fabric tear and bursting strength
9. Fabric flexural rigidity, bending modulus and crease recovery
10. Drapeability of fabrics
11. Fabric abrasion and pilling resistance
12. Fabric air permeability and thickness
13. Seam strength and seam slippage

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion the students will be able to

- Measure important characteristics of fabric and garment
- Interpret the results obtained during evaluation of fabrics

LAB EQUIPMENTS

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

Baer Sorter	- 1 No.
Fibre Bundle strength tester	- 1 No.
Fibre Fineness tester	- 1 No.
Trash Analyser	- 1 No.
Projection Microscope	- 1 No.
Wrap Reel	- 1 No.
Wrap Block	- 1 No.
Yarn Twist Tester	- 1 No.
Single Yarn Strength Tester	- 1 No.
Bundle yarn strength tester	- 1 No.
Ballistic Tester	- 1 No.
Yarn Unevenness tester	- 1 No.
Weighing balance	- 1 No.
Yarn appearance Board Winder	- 1 No.
Yarn appearance Board (Standards)	- 1 No.
Fabric tensile strength tester	-1 No.
Fabric tearing strength tester	-1 No.
Fabric Thickness Tester	-1 No.
Fabric Stiffness Tester	-1 No.
Fabric Crease Recovery Tester	-1 No.
Fabric Bursting Strength Tester	-1 No.
Fabric Abrasion Resistance Tester	-1 No.
Fabric Pilling resistance tester	-1 No.
Fabric air permeability tester	-1 No.
Fabric Drape meter	-1 No.

FT8612 GARMENT MACHINERY LABORATORY L T P C

0 0 2 1

OBJECTIVE:

- To enable students to, understand about the garment machineries.

LIST OF EXPERIMENTS

Performing a study of,

1. A Single-Needle Lock Stitch machine for its parts and various settings points and its threading; preparing stitch samples by using various folders and calculating the SPI for specified/chosen stitch lengths
2. A Double-Needle Lock Stitch machine for its parts, various settings points and its threading; preparing stitch samples and calculating the SPI for given stitch lengths
3. An Over-lock machine for its parts, various settings points and its threading; preparing stitch samples
4. An Over-lock machine for making adjustments of the needle-thread and looper thread tension, feed-ratio, needle-and-looper setting and knife setting
5. A Flat-lock machine for its parts, various settings points and its threading; preparing stitch samples
6. A Flat-lock machine for making adjustments of the needle-thread and looper-thread tensions, feed-ratio, needle-and-looper setting and spreader setting
7. A Button-holing machine for its parts, various settings points and its threading and prepare samples
8. A Feed-off-the-arm machine for its parts, various settings points and its threading and prepare stitch samples

OUTCOME:

- Upon the completion of this lab, the students will be able to understand the mechanism, machine settings and produce the samples from various garment machineries.

LAB EQUIPMENT FOR A BATCH OF 30 STUDENTS

Single needle lock stitch machine	- 15 Nos.
Double needle lockstitch machine	- 2 Nos.
Flat lock machine with elastic attachment	- 1 No.
Feed off the arm machine	- 1 No.
Over lock machine	- 2 Nos.
Button holing & button attachment machine	- 1 each

TOTAL: 30 PERIODS

FT8701 APPAREL COSTING L T P C

3 0 0 3

OBJECTIVE:

- To learn apparel costing, budgeting and working capital management

UNIT I **9**

Cost accounting, elements of cost, classification of cost elements – examples from apparel industry; standard costing, analysis of variance; breakeven analysis, cost volume profit analysis

UNIT II **18**

Costing of fabrics; costing of apparel – woven, knits of various styles, accounting of prime costs and overhead costs, allocation of overheads, cost control; cost sheet preparation

UNIT III **9**

Working capital management in garment unit – determination, sources, cost; Budget, types of budgets, budgeting and control in apparel industry

UNIT IV **9**

Detailed project report – elements, preparation for a garment unit

TOTAL: 45 PERIODS

OUTCOMES:

At the end of this course, the students would have knowledge on

- Cost accounting and cost elements
- Cost elements involved in fabric and apparel costing
- Working capital management
- Detailed project report preparation

TEXT BOOKS:

1. Pandey I. M., "Financial Management", Vikas Publishing House Pvt. Ltd., New Delhi, 8th Edition, 1999
2. Prasanna Chandra, "Financial Management, Theory and Practice, Tata McGraw-Hill Publishing Company Ltd, 5th Edition, New Delhi, 2001

REFERENCES:

1. Aswat Damodaran, "Corporate Finance Theory and Practice", John Wiley & Sons, 2000
2. James C., Van Home., "Financial Management and Policy", Prentice Hall of India Pvt. Ltd., New Delhi, 1980
3. Thukaram Rao M.E., "Cost and Management Accounting" New Age International, Bangalore, 2004
4. Khan and Jain, "Basic financial Management & Practice", Tata McGraw Hill, New Delhi, 5th edition, 2001

FT8702 GARMENT FINISHING AND CLOTHING CARE L T P C

3 0 0 3

OBJECTIVE:

- To educate the students in techniques and machinery for dyeing and finishing of garments and to impart knowledge on different garment care techniques.

UNIT I **9**

Garment dyeing, dye selection, garment-dyeing machinery. Washing: Stone washing, acid washing, enzyme washing, biopolishing, mercerisation, bleaching, laser fading and ozone fading.

UNIT II **9**

Study of laundry equipment and reagents – soaps – detergents – cleaning action of soaps, study of modern and industrial cleaning agents. Finishing; Optical brightening, mercerization, liquid ammonia, treatment, stiffening, softening, crease resistant and crease retentive finish, anti-static finish, anti-bacterial finish, water proofing, flame proofing, soil release finish, mildew and moth proofing.

UNIT III **9**

Study of garment finishing room equipments – steam iron – steam busters – vacuum ironing tables– form finishing equipments – trouser topper, shirt press, collar/cuff press, form finisher for jackets and coats – study of boiler and related equipment for finishing room. Fusing machines for interlinings

UNIT IV **9**

Principles of laundering – stain removal – various solvents for stain removing blood, tea, rust, oil/grease etc. – different methods of washing – application of friction by hand rubbing – scribing – tumble wash

UNIT V **9**

Stain removal – Oil, colour matter, chemicals. Use of care labels and standards / norms for care labels. Garment laundering equipments and procedures. Study of different types of house hold/industrial washing machines- rotary –swirling – pressure – tumble wash etc

TOTAL: 45 PERIODS

OUTCOMES:

The students would have knowledge on

- Dyeing techniques for apparel
- Applying of different finishes on garments
- Machinery and equipments for garment care

TEXT BOOKS:

1. Dantyagi S., "Fundamentals of Textile and their care", Oriental longmans Ltd, New Delhi, 1980.
2. Denlkar, "Household Textiles & laundry work", Atma Ram & Sons, Delhi, 1993.
3. Harrison. P (Editor), "Garment Dyeing: Ready to wear fashion from the dye house", The Textile Institute, U.K. 1988.
4. Noemia D' Souza., "Fabric Care", New Age International (P) Ltd. Publisher, Chennai, 1998.

REFERENCES:

1. Marsh, J.T., "An Introduction to Textile Finishing", Chapman and Hall Ltd., London, 1979.
2. Shenai, V.A., "Technology of Textile Finishing", Sevak Publications, Bombay, 1995.
3. Hall, A.J., "Textile Finishing" Elsevier Publishing Co. Ltd., 1986.

FT8703 GARMENT ACCESSORIES AND EMBELLISHMENTS **L T P C**

3 0 0 3

OBJECTIVE:

- To introduce students to different trims, components and fashion accessories used in apparel industry to enhance value addition

UNIT I **9**

Garment components and trimmings – labels and motifs, linings, interlining wadding, lace, braid and elastic, seam binding and tape, shoulder pads, eyelets and laces, zip fasteners, buttons – tack buttons, snap fastener and rivets; buckles, frag closures, belts, ribbons, fringe, emblems and sequins, decorative and functional trimmings; performance properties of components and trims.

UNIT II **9**

Hook and loop fastening (Velcro), Zippers – anatomy of zipper, types, function of zipper, position of slider, standards on zipper, selection of zipper, application of zipper, shortening of zipper; evaluation of quality of accessories

UNIT III **9**

Embroideries - basic embroidery stitches – chain stitch, button hole stitch, herringbone stitch, feather stitch, lazy daisy, double knot stitch, interlacing stitch, stem stitch, French knot stitch, types of embroidery machines, limitations of hand embroidery; kaustic embroidery; kasida, kathiwar; Sind; chickankari; zardosi; tribal embroideries.

UNIT IV **9**

Fashion accessories – footwear, handbags, gloves, hats, scarves, hosiery, jewelry, watches; testing of zippers, elastic waist band testing, fusible interlinings; safety issues for different accessories in children garment.

UNIT V **9**

Printing – introduction; different methods – block printing, roller, screen, discharge, resist and pigment; styles of printing - batik, tie and dye, patch work, appliqué work, bead work

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this practical course, the students shall understand

- Different types of accessories used for garments
- Different types of embroideries
- Different types of printing

TEXT BOOKS:

1. Shailaja D. Naik, "Traditional Embroideries of India", API Publishing Corporation, New Delhi, 1996
2. Ruth E. Glock., and Grace I Kunz., "Apparel Manufacturing Sewn Product Analysis",4th Edition, Prentice Hall, New Jersey,2004, ISBN: 0131119826 | ISBN-13: 9780131119826

REFERENCES:

1. Shella Paine, "Embroidered Textiles", Thames and Hudson Ltd., U. S. A., 1990.
2. Jan Beaney and Jean Little John, "Complete Guide to Creative Embroidery: Design, Textures, Stitches", Bt Batsford, 2005.

FT8711 COMPUTER AIDED GARMENT DESIGN LABORATORY L T P C
0 0 4 2

OBJECTIVE:

- To train the students in CAD used for pattern making of garments and marker planning

LIST OF EXPERIMENTS

1. Development of the basic Blocks for Men and Women (top and bottom)
2. Pattern for Men's Formal shirt
3. Pattern for Men's formal trouser (pleats and Flange)
4. Pattern for Women's Tops (application of Dart manipulation principle)
5. Pattern for Women's Bottoms (skirts, pants – Added fullness techniques Gatherings and pleats)
6. Patterns for children's dresses (principles of contouring applied)
7. Patterns for Dungaree and work wear
8. Patterns for Close fitting body shapes
9. Reverse pattern Engineering
10. Grading rules
11. Marker planning and optimization

TOTAL: 60 PERIODS

OUTCOME:

- Upon completion of this course the student will have practical experience on pattern making of different wears, marker planning and optimization.

LIST OF EQUIPMENT FOR BATCH OF 30 STUDENTS

- Computer with Marker planning software - 15 Users.
- Pattern Digitizer - 02 Nos.
- Printer / plotter (above 42'') - 01 No.

FT8001 COMPUTER APPLICATION IN APPAREL INDUSTRY L T P C
3 0 0 3

OBJECTIVES

- To impart knowledge on role and importance of computer in apparel industry.
- To impart knowledge on 3D garment design and modeling techniques.
- To impart knowledge on digital printing and CAD on textile product design.

UNIT I **9**

Introduction, Technologies in Apparel Manufacturing, Role of computers in apparel industry – digitizing, grading, marker making, cutting, Importance of computer in the field of designing in apparel industry.

UNIT II **9**

Techniques for 3D garment design - Sketch-based garment design, Surface flattening for virtual garments, Online garment-shopping system: problems and solutions.

UNIT III **9**

Model development, Computer graphics techniques for garment structure and appearance, Rendering of garment appearance and model demonstration for garments, Advanced modeling techniques.

UNIT IV **9**

Digital printing technology for textiles and apparel, global developments in digital printing technology, colour technology and colour management, stages of computing for digital printing.

UNIT V **9**

3D technologies for apparel and textile design, applications of 3D human body modeling, Animations, Conventional design, development and production processes for apparel, Role of CAD and visualization technologies in integrated textile product design.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, students shall able to know about,

- Role and importance of computer in apparel industry.
- 3D garment design and modeling techniques
- Digital printing and CAD on textile product design

TEXT BOOKS:

1. Jinlian Hu, "Computer Technology for Textiles and Apparel", Woodhead Publishing, 2011.
2. M. Stott, "Pattern Cutting for Clothing using CAD", Woodhead Publishing, 2012.

REFERENCES:

1. Inga Dabolina , AusmaVilumsone, "The Role of the Latest Clothing CAD/CAM System Applications in the Educational Process", Material Science. Textile and Clothing Technology, Vol.7, pp. 63-68, 2012.

2. Joyce Adwoa Oppong, Eunice Antiaye and Vivian Biney-Aidoo, “Appraising the Use of Computer Technology in Garment Production Firms in Accra/Tema Metropolis”, Arts and Design Studies, Vol.17, pp. 25 – 33, 2014.

FT8002 KNIT WEAR DEVELOPMENT L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to learn about design and production of different garments

UNIT I INTRODUCTION 9

Introduction to knitted materials types and features; grain, support and shape trims, linings and interlinings; requirements for sewing knitted fabrics; compression garments

UNIT II CHILDREN’S WEAR 9

Construction of Children’s wear - stitches, seams, sewing and special machine selection and assembly operations; Rompers, Creeper, Jumpsuit, legging and skirts

UNIT III WOMEN’S WEAR 9

Women’s wear construction- stitches, seams, sewing and special machine selection and assembly operations – Tunic, Tank Tops, Sports top’s, Capri, Legging

UNIT IV MEN’S WEAR 9

Construction and assembly of men’s wear - stitches, seams, sewing and special machine selection and assembly operations; T-Shirts, Polo Shirts, Raglon, Kimono Tee’s, Cap’s, Active wear, Sweat shirts, Hooded and non-hooded jackets

UNIT V INTIMATE APPARELS 9

Construction of Intimate apparels of men’s and women’s- assembly of men’s wear - stitches, seams, sewing and special machine selection and assembly operations; Vests, Briefs, women’s Hipster, panties, bikini, thong, brassier and trunks

TOTAL: 45 PERIODS

OUTCOME:

- Upon completion of this course, the students shall be able to select the fabric and design the garment for children, women and men.

TEXT BOOKS:

1. Harrold Carr., and Barbara Latham., “Technology of Clothing Manufacture”, Blackwell Scientific Publications, UK, 2000, ISBN: 0632037482 | ISBN-13: 9780632037483
3. Ruth E. Glock., and Grace I Kunz., “Apparel Manufacturing Sewn Product Analysis”,4th Edition, Prentice Hall, New Jersey,2004, ISBN: 0131119826 | ISBN-13: 9780131119826
4. Lynn Nottage., “Intimate Apparel / Fabulation”, Theatre Communications Group, USA, 2006, ISBN: 1559362790 | ISBN-13: 9781559362795

REFERENCES:

1. Stokes Terry., “Intimate Apparel”, Brooklyn: Release Press, USA, 1980, ISBN: 0913722197 | ISBN-13: 9780913722190
2. Singer., “Sewing Lingerie”, CyDecosse Incorporated, Mexico, 1991,ISBN: 0865732604 | ISBN- 13: 9780865732605
3. Ann Haggar., “Pattern Cutting for Lingerie, Beachwear and Leisurewear”, Black Well Science Limited, France, 2004, ISBN: 140511858X | ISBN-13: 9781405118583

FT8003 APPLICATION OF ERP AND MIS IN APPAREL INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

- To impart knowledge on enterprise resource planning and implementation in apparel.
- To impart knowledge on management information system, its function and characteristics.

UNIT I **9**

Enterprise Resource Planning - principle, framework, application and suitability in garment production

UNIT II **9**

Client/Server architecture; technology choices; SCM, CRM – concepts, Business Process Re engineering, Data ware Housing, Data mining, ERP system packages.

UNIT III **9**

ERP implementation strategies – organizational and social issues, data safety & security, ERP implementation in a garment production facility

UNIT IV **9**

Management Information System – management, key aspects of management, functions, management as a control system, levels of management.

UNIT V **9**

Information – requirements, properties and scope, information economics, types and characteristics.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, students shall able to know about,

- enterprise resource planning and implementation in apparel management information system, its function and characteristics

TEXT BOOKS:

1. Brady, “Enterprise Resource Planning”, Thomson Learning, U. K., 2001
2. Hitesh Gupta, “Management Information System”, International Book House Private Limited, New Delhi, 2011.
3. Alexis Leon, “ERP Demystified”, Tata McGraw–Hill Publishing Company limited, New Delhi, 2002

REFERENCES:

1. Sadagopan. S., “ERP-A Managerial Perspective”, Tata McGraw-Hill, New Delhi, 2001
2. Jose Antonio Hernandez, “The SAP R/3 Handbook”, Tata McGraw-Hill, New Delhi, 2001
3. Vinod Kumar Crag and Bharat Vakharia, “Enterprise Resource Planning Strategy”, Jaico Publishing house, Mumbai, 1999
4. Garg and Venkitakrishnan, “ERPWARE, ERP Implementation Framework”, Prentice Hall of India, New Delhi, 1999
5. Vinod Kumar Grag and Venkitakrishnan N.K., “Enterprise Resource Planning”, Prentice Hall of India, New Delhi, 2001

TT8092 **DENIM MANUFACTURING** **L T P C**
3 0 0 3

OBJECTIVES:

To enable the students to learn about

- Requirement of fibre, yarn
- Production of fabric, dyeing and finishing
- Stitching for denim garments

UNIT I **5**

An overview on denim and jeans; fiber qualities for denim yarn production; yarns for denim production and their characteristics

UNIT II **9**

Indigo dye and its reduction; dyeing technology of denim yarns; non-indigo dyes for denims; weaving and finishing of denim fabrics.

UNIT III **13**

Denim garment manufacture -types of garments and production sequence, seams and stitches, sewing threads and needles, sewing machines, fastenings, trims, pressing and Inspection.

UNIT IV **9**

Dry and wet finishes to produce effects and colours on denim garments; novel denims

UNIT V **9**

Dyeing of denim garments; digital printing of denim garments; comfort aspects of denim

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the students shall know about

- Fibres and yarns used for production of denim garments
- Weaving and chemical processing of denim fabrics
- Stitching and finishing of denim garments

TEXT BOOKS:

1. Parmar M. S., Satsangi S. S., and Jai Prakash, “Denim – A fabric for ALL (Dyeing, Weaving, Finishing)”, NITRA, Ghaziabad, India, 1996.
2. Roshan Paul (Ed.), “Denim – Manufacture, Finishing and Applications”, Woodhead Publishing, 2015, ISBN: 0857098438 | ISBN-13: 9780857098436

REFERENCES:

1. Denim: Manufacture, Finishing & Applications, Ed. by Roshan Paul, The Textile Institute, Manchester, 2016
2. Denim: A Fabric for all Dyeing, Weaving & Finishing by M.S. Parmar, S.S. Satsangi, Dr. Jai Prakash, NITRA, 1996

GE8071 **DISASTER MANAGEMENT** **L T P C**
3 0 0 3

OBJECTIVES:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
- To enhance awareness of institutional processes in the country and

- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity

UNIT I INTRODUCTION TO DISASTERS 9

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Disasters: Types of disasters – Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.

UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR) 9

Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj

Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stake-holders- Institutional Processess and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT 9

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

UNIT IV DISASTER RISK MANAGEMENT IN INDIA 9

Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.

UNIT V DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS 9

Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.

TOTAL: 45 PERIODS

OUTCOMES:

The students will be able to

- Differentiate the types of disasters, causes and their impact on environment and society
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarious in the Indian context, Disaster damage assessment and management.

TEXT BOOKS:

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.

REFERENCES:

1. Govt. of India: Disaster Management Act , Government of India, New Delhi, 2005
2. Government of India, National Disaster Management Policy,2009

FT8004 QUALITY ASSURANCE IN FABRIC AND GARMENT PRODUCTION L T P C
3 0 0 3

OBJECTIVES:

- To impart knowledge on defects and control systems.
- To impart knowledge on controls in knitted and woven fabric.
- To impart knowledge on process control in garment production process and its properties.

UNIT I **9**

Fabric Inspection systems, Fabric defects – major defects and minor defects, Statistical process control, Application of Control systems in fabric manufacturing.

UNIT II **9**

Process control in knitting – quality control of knitted fabrics, loop length control, common faults in knitted fabrics, control measures.

UNIT III **9**

Process control in weaving –fabric quality, on line process control, quality control and monitoring.

UNIT IV **9**

Process control - spreading, pattern making, cutting, process control in sewing, causes of damage to fabric during sewing, control of fusing and pressing operations, storage and packaging.

UNIT V **9**

Sewability of fabrics, strength properties of apparel, dimensional changes in apparel due to laundering, dry-cleaning, steaming and pressing, quality control in printing, embroidery, washing and other accessories.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, students shall able to know about,

- Defects and control systems
- Controls in knitted and woven fabric
- Process control in garment production process and its properties

TEXT BOOKS:

1. Abhijit Majumdar, Apurba Das, R. Alagirusamy and V. K. Kothari, “Process Control in Textile Manufacturing”, Woodhead Publishing, 2013.
2. Pradip V.Mehta**,** P. E. Satish, K. Bhardwaj, “Managing Quality in The Apparel Industry”, New Age International Private Limited Publishers, Delhi, 2006.

REFERENCES:

1. P. W. Harrison, “On-line Quality Control in Spinning and Weaving”, The Textile Institute, 1988.
2. Pradip V.Mehta, “An Introduction to Quality Control for the Apparel Industry”, J.S.N. Internationals, 1992.

FT8005 FASHION PHOTOGRAPHY L T P C
3 0 0 3

OBJECTIVES:

- To educate on principles of photography. Different techniques and lighting methods
- To educate on different types of photography equipments. Photography for different media, printing techniques.
- To impart knowledge on videography and computer applications in photography.

UNIT I **9**

General principle – Photography - camera, lens. How to use your camera – Needs and methods lighting techniques for indoor / outdoor photography – methods and equipment’s – advantage and disadvantages.

UNIT II **9**

Image capture – parts of camera- classification and types of camera – Applications Disadvantages. Light – Natural, artificial, flash and strobe.

UNIT III **9**

Photography techniques and equipment for different fields. Basic, studio, location portraiture, Photojournalism, Fashion Photography, Fashion shows.

UNIT IV **9**

Exposure and processing of colour and black and white films. Different techniques in developing. Printing – definitions – Methods of printing for black & white color.

UNIT V **9**

Photography using digital cameras – Video photography – image mixing – advertising and still life - application of computers in photography.

TOTAL: 45 PERIODS

OUTCOMES:

The students would have enhanced their knowledge on

- Different photography techniques and equipments.
- Different printing techniques.

TEXT BOOK:

1. W.R. Miller, “Basic Industrial Arts, Plastics, Graphics Arts, Power Mechanics, Photography”, McKnight Publishing Company, Illionois, 1978.
2. Nirmal Pasricha, "A Professional‘s Basic Photography", Black Rose Publications, Delhi, 2002.
3. Daniel Lezano, "The Photography Bible", A David and Charles Book., United Kingdom, 2004.

REFERENCES:

1. John Hedge, “Photography Course”, John Hedge Co, 1992

2. Simon Joinson, "Get the most from your Digital Camera", A David and Charles Book., United Kingdom, 2004.
3. Steve Bavister, "35 mm Photography -The Complete Guide", A David and Charles Book., United Kingdom, 2004.
4. Peter Cattrell, "Photography", Octopus Publishing Group Ltd, London 2005.
5. Sue Hillyard, "The Photography Handbook - A Step by Step Guide", New Holland Publishers, London, 2003

FT8006 FASHION MANAGEMENT L T P C
3 0 0 3

OBJECTIVES:

- To impart knowledge on fashion forecasting and trend prediction.
- To impart knowledge on fashion merchandising, branding and visual merchandising.
- To impart knowledge on fashion press, shows, entrepreneur and promotional activities.

UNIT I **9**

The fashion forecasting industry, process, trend prediction as a tool, presenting trend information, forecasting agencies.

UNIT II **9**

Fashion buying, merchandising, retail formats, retail calendar, importing fashion goods.

UNIT III **9**

Fashion communication, fashion consumer, branding, fashion marketing, fashion promotion, visual merchandising, fashion advertising.

UNIT IV **9**

Fashion calendar, fashion press, fashion editorial, trade shows and events.

UNIT V **9**

Fashion entrepreneur, setting up business, creating business planning, branding basics, innovative marketing and promotion.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, students shall able to know about,

- fashion forecasting and trend prediction,
- fashion merchandising, branding and visual merchandising and
- fashion press, shows, entrepreneur and promotional activities

TEXT BOOKS:

1. Susan Dillan, “The Fundamentals of Fashion Management”, AVA publishing, 2011.
2. Mike Easey, “Fashion Marketing”, Third Edition, Wiley- Blackwell Publishing, 2009.

REFERENCES:

1. Harriet Posner, “Marketing Fashion Second edition: Strategy, Branding and Promotion”, Laurence King Publishing, 2015.
2. Sandra Burke, “Fashion Entrepreneur”, second edition, Burke Publishing, 2012.

FT8007 **PROTECTIVE GARMENTS** **L T P C**
3 0 0 3

OBJECTIVE:

- To enable the students understand the selection of fibre, yarn, fabric and design of garments for different protective applications

UNIT I FIBRES, YARNS AND FABRICS FOR PROTECTIVE GARMENTS 13

Characteristic requirements of fibre, yarn and fabric for flame proof, heat resistant, ballistic resistance, electrical conduction, bacterial protection, radiation protection and radiation contamination protection

UNIT II CHEMICAL FINISHES FOR PROTECTIVE GARMENTS 5

Mechanism, Chemistry, Materials and methods - Flame retardant, Liquid repellent, Antistatic, Antibacterial, UV protection and mite protection finishes

UNIT III PROTECTIVE GARMENTS IN DIFFERENT APPLICATIONS 9

Protective fabrics used in the medical field and in hygiene; military combat clothing; protective fabrics against biological and chemical warfare; textiles for high visibility; antigravity suit

UNIT IV PROTECTIVE GARMENT CONSTRUCTION 9

Garment construction - method of construction of garments according to various protective end uses; use of accessories for protective garment; ergonomics of protective clothing

UNIT V EVALUATION OF PROTECTIVE GARMENTS 9

Standards and test method for protective fabric performance - flame retardant finishes, liquid repellent finishes, antistatic, liquid repellent, antibacterial, UV protection, mite protection; manikins-thermal manikins, segmented thermal manikins; evaporative resistance measurement-moisture permeability index, skin model; concept of dynamic manikins; permeation resistance test-index of penetration and index of repellency; liquid tight integrity and gas tight integrity

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the students shall

- Select fibres, yarns and fabrics for different protective applications
- Construct protective garments
- Evaluate protective garments

TEXT BOOKS:

1. Pushpa Bajaj., and Sengupta A.K., “Protective Clothing”, The Textile Institute, 1992, ISBN:1- 870812 – 44-1.
2. Chellamani K. P., and Chattopadhyay D., “Yarns and Technical Textiles”, SITRA, 1999.
3. Scott R.A., “Textiles for Protection”, Wood head Publishing Limited, Cambridge, UK, ISBN:1- 85573-921-6, 2005.
4. Horrocks A.R. and Anand S.C., “Handbook of Technical Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN:1-85573-385-4, 2004.

REFERENCES:

1. Adanur S., “Wellington Sears Handbook of Industrial Textiles”, Technomic Publishing Co. Inc., 1995, ISBN: 1 – 56676 – 340 – 1.

2. Fan Q., “Chemical Testing of Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN:1-85573-917-8, 2005.
3. Long A.C., “Design and Manufacture of Textile Composites”, Wood head Publishing Limited, Cambridge, UK, ISBN: 1-85573-744-2, 2005.
4. Fung W., “Coated and Laminated Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN:1-85573-576-8, 2002.
5. Saville.B.P., “Physical Testing of Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN:1-85573-367-6, 1999
6. Anand S.C., Kennedy J.F., Miraftab M., and Rajendran S., “Medical Textiles and Biomaterials for Health Care”, Wood head Publishing Limited, Cambridge, UK, ISBN:1-85573- 683-7, 2006

FT8008 APPAREL SIZE AND FIT ANALYSIS L T P C
3 0 0 3

OBJECTIVE:

- The course is aimed at providing an overview of sizing system and its impact on the fit of the constructed silhouettes.

UNIT I **12**

Anthropometry; Study of body measurements – infants, children’s, women’s and men’s. perception of body appearance; figure analysis; body ideals; height and weight distributions; body proportions.

UNIT II **12**

History of sizing system; creating sizing system. Sizing standardization-numbered, lettered sizing-Men’s, Women’s and Children’s. Methods of sizing for mass production of clothing for men, women. Mass customization-sizing technologies and application.

UNIT III **12**

Fit-Elements of fit-Human performance in clothing system-objective and subjective evaluation of fit. Analyzing poor fit – pattern alteration for fit. Virtual garmenting.

UNIT IV **9**

Fabric properties influencing clothing appearance and fit. Fabric drape, seamed fabric drape, dynamic fabric drape. Objective evaluation of overall garment appearance.

TOTAL: 45 PERIODS

OUTCOME:

- The students would develop an understanding of the complex issue of sizing and overall garment appearance

TEXT BOOKS:

1. Fan J, Yu W and Hunter L, “Clothing Appearance and Fit”, The Textile Institute, Wood head Publishing Limited, England, 2004.
2. Ashdown S P, “Sizing in clothing”, The Textile Institute, Woodhead Publishing Limited, England, 2007.
3. Sandra Betzina ,”Fast Fit-Easy pattern alterations for every figure”, The Taunton Press, Inc., Singapore, 2003.

REFERENCES:

1. Patty Brown and Janett Rice, “Ready-To-Wear Apparel Analysis”, Prentice Hall, 2001.
2. Editors of Creative publishing,” The Perfect Fit- classic guide to alter patterns”, Creative publishing international, USA, 2005.
3. Lynn Macintyre and Mary Tilton, “Easy Guide to sewing”, Taunton press, USA, 2009.

TT8791 OPERATIONS RESEARCH IN TEXTILE INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about

- Various operations research (OR) methods that can be applied in the textile industry
- Designing of OR problem related to textile industry
- Method of solving OR problems

UNIT I **9**

Scope of operation research, applications, limitations; linear programming problems – construction, solutions by graphical method, simplex method, Big M method; sensitivity analysis; application of LP technique for mixing optimization in spinning mill

UNIT II **9**

Transportation problem – construction, initial basic feasible solution – North West Corner rule, lowest cost entry method, Vogel’s Approximation Method; optimality test - … method, stepping stone method; replacement analysis

UNIT III **9**

Assignment problem – construction, solution by Hungarian method, application in textile industry; sequencing problems; integer programming – construction, solving by cutting plane method

UNIT IV **9**

Decisions theory - decisions under assumed certainty, decision under risk, decision under uncertainty, illustrations from textile industry; inventory control - EOQ models-deterministic models –probabilistic models, simulation theory, models, queuing system.

UNIT V **9**

Project planning and control models: CPM, PERT – network representation, determining critical path, project duration; crashing of project duration; resource leveling

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the students will be able to

- Design operations research problems that can be applied to textile industry.
- Solve the OR problems

TEXT BOOKS:

1. Hamdy A Taha, “An Introduction to Operations Research, Prentice Hall, 8th Edition.
2. Panneerselvam R., “Operations Research”, Prentice Hall of India, 2002
3. Sharma J. K., “Operations Research: Theory and Applications”, Macmillan, 1997

REFERENCES:

1. Hillier and Lieberman, "Introduction to Operations Research", McGraw-Hill International Edition, Seventh Edition, 2001

2. W.J. Fabrycky, P.M. Ghare & P.E. Torgersen, "Applied Operation Research and Management Science" Prentice Hall, New Jersey, 1984
3. Tulsian P.C., "Quantitative Techniques Theory and Problems", Dorling Kindersley (India) Pvt. Ltd., 2006
4. Ronald L. Rardin, "Optimization in Operations Research", Pearson Education, 1998
5. Srivastava U.K., Shenoy G.V., Sharma S. C., "Quantitative Techniques for Managerial Decision", Second Edition, New Age International (P) Ltd., 2007
6. Gupta P. K., Hira D.S., "Problems in Operations Research", S. Chand & Company, 2002
7. Mustafi C.K., "Operations Research: Methods and Practice", 3rd Edition, New Age International (P) Ltd., 2007

FT8009 INTIMATE APPAREL L T P C
3 0 0 3

OBJECTIVES:

- To acquaint student on the design, material, accessories and sewing aspects of intimate garments

UNIT I **5**

Intimate apparels – Definition, classification, materials-fiber, fabric and accessories; physical and physiological requirements of intimate apparels

UNIT II **13**

Design analysis, measurements, pattern drafting of men's intimate apparel – Long johns, tank top,tanga, boy shorts, knickers, bikini underwear, thong, boxer briefs, boxer shorts and jock strap.

UNIT III **13**

Design analysis, measurements, pattern drafting of women's intimate apparel – waist petticoats, panties, camisoles, tube top, shape wear, bikini and bra.

UNIT IV **5**

Intimate apparel accessories - Bra wire, hook and eye tape, ring and slider, buckle, plastic bone,elastics and sewing threads

UNIT V **9**

Sewing of intimate apparels - seams, stitches, machines; lamination; moulding and welding technique.

TOTAL: 45 PERIODS

OUTCOME:

- Upon completion of this course, the students will have the skills essential to design and develop intimate apparels

TEXT BOOKS:

1. Ann Haggar, "Pattern Cutting for Lingerie, Beach Wear and Leisure Wear", Black Well Science Limited, France, 2001.
2. Winne Yu, "Advances in Women's Intimate Apparel Technology", Wood head Publishing Limited, 2016.
3. Winne Yu, J. Fan, S.C. Harlock, S.P. Ng., "Innovations and Technology of Women's Intimate Apparel", Wood head Publishing Limited, England 2006.

REFERENCES:

1. Helen Joseph, Armstrong, "Patternmaking for Fashion Design", Pearson Education Pte. Ltd., 2005.

2. Winifred Aldrich, “Metric Pattern Cutting for Children’s Wear and Baby Wear”, Blackwell Publishing, 2004.

GE8075 INTELLECTUAL PROPERTY RIGHTS L T P C
3 0 0 3

OBJECTIVE:

- To give an idea about IPR, registration and its enforcement.

UNIT I INTRODUCTION 9

Introduction to IPRs, Basic concepts and need for Intellectual Property - Patents, Copyrights, Geographical Indications, IPR in India and Abroad – Genesis and Development – the way from WTO to WIPO –TRIPS, Nature of Intellectual Property, Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR.

UNIT II REGISTRATION OF IPRs 10

Meaning and practical aspects of registration of Copy Rights, Trademarks, Patents, Geographical Indications, Trade Secrets and Industrial Design registration in India and Abroad

UNIT III AGREEMENTS AND LEGISLATIONS 10

International Treaties and Conventions on IPRs, TRIPS Agreement, PCT Agreement, Patent Act of India, Patent Amendment Act, Design Act, Trademark Act, Geographical Indication Act.

UNIT IV DIGITAL PRODUCTS AND LAW 9

Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection – Unfair Competition – Meaning and Relationship between Unfair Competition and IP Laws – Case Studies.

UNIT V ENFORCEMENT OF IPRs 7

Infringement of IPRs, Enforcement Measures, Emerging issues – Case Studies.

TOTAL:45 PERIODS

OUTCOME:

- Ability to manage Intellectual Property portfolio to enhance the value of the firm.

TEXT BOOKS:

1. V. Scople Vinod, "Managing Intellectual Property", Prentice Hall of India pvt Ltd, 2012
2. S. V. Satakar, “Intellectual Property Rights and Copy Rights, Ess Ess Publications, New Delhi, 2002

REFERENCES:

1. Deborah E. Bouchoux, “Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets”, Cengage Learning, Third Edition, 2012.
2. Prabuddha Ganguli, ”Intellectual Property Rights: Unleashing the Knowledge Economy”, McGraw Hill Education, 2011.
3. Edited by Derek Bosworth and Elizabeth Webster, The Management of Intellectual Property, Edward Elgar Publishing Ltd., 2013.

GE8076 PROFESSIONAL ETHICS IN ENGINEERING L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES 10

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 – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS 9

Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION 9

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS 9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk - Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination.

UNIT V GLOBAL ISSUES 8

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility.

TOTAL: 45 PERIODS

OUTCOME:

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.

TEXT BOOKS:

1. Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009.
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and

Engineers", Oxford University Press, Oxford, 2001.
5. Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd.,New Delhi, 2013.
6. World Community Service Centre, "Value Education", Vethathiri publications, Erode, 2011.

Web sources:

1. www.onlineethics.org
2. www.nspe.org
3. www.globalethics.org
4. www.ethics.org

FT8072 RETAIL MANAGEMENT AND VISUAL MERCHANDISING L T P C
3 0 0 3

OBJECTIVES:

- To introduce the students, the fashion business segments, retail management concepts
- To acquaint the students with fashion communication tools

UNIT I **9**

Retailing, current global and Indian retail scenario in garment and fashion, key drivers of Indian apparel retail business, growth of organised apparel retail in India; understanding the Indian retail economics, foreign direct investment in Indian apparel retail.

UNIT II **9**

Operational excellence, customer service strategies, pricing strategies, inventory levels and merchandise availability as a strategy, case studies on Indian and International retail stores, retail business formats, retail management information system

UNIT III **9**

Objectives of store planning, location, design, retail image mix, layout plan for retail stores. Buying, mark-up and mark-down in merchandise management, private labels; apparel franchising- types, Key success factors

UNIT IV **9**

Visual merchandising as a communication tool, presentations in visual merchandising, visual merchandising and enhanced customer buying decision, interiors with respect to brand, sensory elements, signs and graphics, focal point for season and type of sale; case studies on visual merchandising

UNIT V **9**

An introduction to fashion e-commerce, apparel and fashion e-business, s-commerce vs. ebusiness, economic forces – advantages – myths – e-business models, design, develop and management of e-business, web and social networking, mobile commerce - business applications, classifications, and models, payments, security and legal requirements

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the student shall know

- The concept of retail management
- The concept of visual merchandizing
- e-commerce, s-commerce

TEXT BOOKS:

1. Gibson G. Vedamani., “Retail Management Functional Principles & Practices", Third Edition, Jaico Publishing House, 2003, ISBN -10:81-7992-151-4
2. Martin.M. Pegler., “Visual Merchandising and Display”, (fifth edition), Fair Child Publications, 2011, ISBN 10: 1563674459
3. Harvey M.Deitel., Paul J.Deitel., and Kate Steinbuhler., “e-business and e-commerce for managers”, Pearson, 2011, ISBN: 0130323640 | ISBN-13: 9780130323644

REFERENCES:

1. Efraim Turban., Jae K. Lee., David King., Ting Peng Liang., and Deborrah Turban., “Electronic Commerce –A managerial perspective”, Pearson Education Asia, 2012, ISBN: 0139752854 / ISBN: 978-0139752858
2. John Fernie, Suzanne Fernie and Christopher Moore, “Principles of Retailing”, Reed Elsevier India Private Limited, New Delhi, 2007.

TT8091 CLOTHING COMFORT L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about the

- Important characteristics of the fabric responsible for its comfort properties and
- Different phenomena which take place in the fabric related to the comfort properties of the fabric

UNIT I **9**

Comfort – types and definition; human clothing system, comfort perception and preferences

UNIT II **9**

Psychological comfort; neuro-physiological comfort-basis of sensory perceptions; measurement techniques - mechanical stimuli and thermal stimuli

UNIT III **9**

Thermo physiological comfort – thermoregulatory mechanisms of the human body, role of clothing on thermal regulations

UNIT IV **9**

Heat and moisture transfer – moisture exchange, wearer’s temperature regulations, effect of physical properties of fibres, behaviour of different types of fabrics

UNIT V **9**

Fabric tactile and mechanical properties - fabric prickliness, itchiness, stiffness, softness, smoothness, roughness, and scratchiness; predictability of clothing comfort performance

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall be able to

- Understand different phenomena such as perception of comfort, fabric mechanical properties and, heat and moisture interaction and
- Correlate the property of the fabric with comfort to the wearer

TEXT BOOKS:

1. Apurba Das., and Alagirusamy R., “Science in clothing comfort”, Wood head Publishing India Pvt. Ltd., India, 2010, ISBN: 1845697898 | ISBN-13: 9781845697891
2. Guowen Song., “Improving comfort in clothing”, Wood head Publishing Ltd., UK, 2011, ISBN: 1845695399 | ISBN-13: 9781845695392
3. Ukponmwan J.O., “The Thermal-insulation Properties of Fabrics”, Textile Progress 24:4, 1-54, Taylor and Francis, UK, 1993, ISBN: 1870812654 | ISBN-13: 9781870812658.

REFERENCES:

1. Hassan M. Behery., “Effect of Mechanical and Physical Properties on Fabric Hand”, Wood head Publishing Ltd.,2005, ISBN: 1855739186 | ISBN-13: 9781855739185
2. Li Y., “The Science of Clothing Comfort”, Textile Progress 31:1-2, Taylor and Francis, UK, 2001, ISBN: 1870372247 | ISBN-13: 9781870372244
3. Laing R.M., and Sleivert G.G., “Clothing, Textile and Human Performance” Textile Progress 32:2, The Textile Institute, 2002, ISBN: 1870372514 | ISBN-13: 9781870372510.

FT8010 TEXTILE AND APPAREL EXIM MANAGEMENT L T P C
3 0 0 3

OBJECTIVE:

- To give the students an exposure on international market for textile products, regulations with respect to export and import of textiles.

UNIT I **5**

International markets for yarns, woven fabrics; international market for cotton, silk, jute, wool and other fibres; export and import of textiles by India – current status, promotional activities

UNIT II **5**

International markets for carpets and home textiles – product types, market potential and statistics, India - current status and promotional activities, role of export promotional councils

UNIT III **9**

International markets for woven piece goods, knitted garments, leather garments; statistics of international apparel market and trade; export incentives, role of AEPC, CII, FIEO, Textile Committee

UNIT IV **13**

Marketing – strategies, global brand building; logistics & SCM; role of export finances & EXIM banking, ECGC, Indian council of arbitration, FERA; impact of foreign trade on Indian economy

UNIT V **13**

Exim policy - customs act, acts relating to export/import of textile and apparel; Indian customs formalities - export documentation for excisable goods, import documentation, clearance of import goods; concepts - 100% export oriented units, export processing zones, special economic zones; duty drawback procedure; import/export incentives; licenses; case study

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the students shall have the knowledge on

- International market for textile products

- Global marketing strategies and
- EXIM policy and procedures

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, “International Business”, 6th edition, Tata Mc Graw Hill, 2009
2. John D. Daniels and Lee H. Radebaugh, “International Business”, Pearson Education Asia, New Delhi, 2000
3. K. Aswathappa, “International Business”, Tata Mc Graw Hill, 2008

REFERENCES:

1. Michael R. Czinkota, IlkkaA. Ronkainen and Michael H. Moffet, “International Business”, Thomson, Bangalore, 2005
2. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, “International Management”, Tata Mc Graw Hill, 2006
3. Oded Shenkar and Yaong Luo, “International Business”, John Wiley Inc., Noida, 2004
4. Datey V.S., “Taxmann’s Indirect Taxes”, Taxmann Publications, 2008
5. Kapoor D.C., “Export Management”, Vikas Publishing House Pvt. Ltd., 2009

GE8077 TOTAL QUALITY MANAGEMENT L T P C
3 0 0 3

OBJECTIVE:

- To facilitate the understanding of Quality Management principles and process.

UNIT I INTRODUCTION 9

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

UNIT II TQM PRINCIPLES 9

Leadership - Quality Statements, Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS AND TECHNIQUES I 9

The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT - Bench marking - Reason to bench mark, Bench marking process - FMEA - Stages, Types.

UNIT IV TQM TOOLS AND TECHNIQUES II 9

Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

UNIT V QUALITY MANAGEMENT SYSTEM 9

Introduction—Benefits of ISO Registration—ISO 9000 Series of Standards—Sector-Specific Standards—AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements—Implementation—

Documentation—Internal Audits—Registration--**ENVIRONMENTAL MANAGEMENT SYSTEM:** Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO 14001—Benefits of EMS.

TOTAL: 45 PERIODS

OUTCOME:

- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXT BOOK:

1. Dale H. Besterfiled, Carol B. Michna, Glen H. Besterfield, Mary B. Sacre, Hemant Urdhwareshe and Rashmi Urdhwareshe, “Total Quality Management”, Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression, 2013.

REFERENCES:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
3. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
4. ISO9001-2015 standards

TT8078 PRODUCTION AND APPLICATION OF SEWING THREADS L T P C
3 0 0 3

OBJECTIVE:

- To enable the students to understand the requirements and production of sewing threads for different applications

UNIT I **13**

Sewing threads – property requirements for different applications; ticket numbering; characterization of sewing threads; sewability of the thread, seam efficiency index

UNIT II **14**

Types of sewing thread – spun threads, core spun threads, filament threads; production, properties and applications; fancy yarns – types and production; metallic yarns

UNIT III **13**

Characteristics and application of high performance sewing threads - aramid threads, ceramic threads, polypropylene threads, polyethylene threads, polytetrafluroethylene threads, fibreglass threads, other sewing threads – tencel, acrylic, linen, elastic, soluble; embroidery threads

UNIT IV **5**

Sewing defects related to sewing threads – Assessment and control

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the students will be able to understand the

- Production of sewing thread
- Characterization of sewing thread and
- Selection of sewing thread for different end uses.

TEXT BOOKS:

1. Jacob Solinger., “Apparel Production Handbook”, Reinhold Publications, 1998, ISBN: 1879570009 / ISBN: 978-1879570009
2. Rao J.V., and Rajendra Kr.Gaur., “Sewing Threads: Technology, Stitches, Seams, Problems, Needles”, NITRA, 2006.
3. Gong R.H., and Wright R.M., “Fancy yarns –Their manufacture and application”, Woodhead Publishing Ltd, England, 2002, ISBN: 0849315506 | ISBN-13: 9780849315503.

REFERENCES:

1. Ukponmwan J.O., Mukhopadhyay A., and Chatterjee K.N., “Sewing threads”, Textile Progress, 2000, ISBN: 1870372387 | ISBN-13: 9781870372381.
2. Carl A Lawrence., “Fundamentals of Spun Yarn Technology”, CRC Press, Florida, USA, 2003, ISBN: 1566768217 | ISBN-13: 9781566768214
3. Carr H., “The Technology of Clothing Manufacture”, Blackwell Publisher, UK, 2004, ISBN: 0632021934 | ISBN-13: 9780632021932
4. Ruth E. Glock., “Apparel Manufacturing Sewn Product Analysis”, Prentice Hall, New Jersey, 2005,ISBN: 0131119826 | ISBN-13: 9780131119826

TT8076 HOME TEXTILES L T P C
3 0 0 3

OBJECTIVES:

- To enable the students to learn about the
- Recent developments in furnishing, floor covering and other home textile products Various kinds of materials used in home textile.

UNIT I FURNISHINGS 9

Developments in Textile Furnishing; Type of Furnishings Materials – Woven and non-woven; Factors affecting selection of Home Furnishings.

UNIT II FLOOR COVERINGS 9

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

UNIT III CURTAINS AND DRAPERIES 9

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

UNIT IV HOME FURNISHING 9

Advances in period style in, Different styles, and use of Colours, design & texture in home furnishing. Developments in living room furnishing including upholstery, Wall Hangings, Cushion, Cushion Covers, Bolster and Bolster Cover.

UNIT V BED LINENS 9

Advances in the production of - Different Types of Bed Linen, Sheets, Blankets, Blanket Covers, Comforts, Comfort Covers, Bed Spreads, Mattress and Mattress Covers, Pads, Pillows.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall be able to

- Know about different types of home textiles

- Understand the production method of different types of home textile products

TEXT BOOKS:

1. Alexander.N.G., “Designing Interior Environment”, Mas Court Brace Covanorich, Newyork, 1972
2. Donserkery.K.G., “Interior Decoration in India”, D. B. Taraporeval Sons and Co. Pvt. Ltd., 1973

REFERENCES:

1. Wingate I.B. & Mohler J.F., “Textile Farbics & Their Selection”, Prentice Hall Inc., New York, 1984.
2. Irsak.C, " Nonwoven Textiles" Textile Institute", Manchester, 1999
3. Krcma.R., Manual of Non-wovens, Textile Trade Press, Manchester 1993.

GE8074 HUMAN RIGHTS L T P C
3 0 0 3

OBJECTIVE:

- To sensitize the Engineering students to various aspects of Human Rights.

UNIT I **9**

Human Rights – Meaning, origin and Development. Notion and classification of Rights – Natural, Moral and Legal Rights. Civil and Political Rights, Economic, Social and Cultural Rights; collective / Solidarity Rights.

UNIT II **9**

Evolution of the concept of Human Rights Magana carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights.

UNIT III **9**

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.

UNIT IV **9**

Human Rights in India – Constitutional Provisions / Guarantees.

UNIT V **9**

Human Rights of Disadvantaged People – Women, Children, Displaced persons and Disabled persons, including Aged and HIV Infected People. Implementation of Human Rights – National and State Human Rights Commission – Judiciary – Role of NGO’s, Media, Educational Institutions, Social Movements.

TOTAL: 45 PERIODS

OUTCOME:

- Engineering students will acquire the basic knowledge of human rights.

REFERENCES:

1. Kapoor S.K., “Human Rights under International law and Indian Laws”, Central Law Agency, Allahabad, 2014.
2. Chandra U., “Human Rights”, Allahabad Law Agency, Allahabad, 2014.
3. Upendra Baxi, The Future of Human Rights, Oxford University Press, New Delhi.

FT8011 APPAREL ENTREPRENEURSHIP L T P C
3 0 0 3

OBJECTIVE:

- Study of this subject provides an understanding of the scope of an entrepreneur, key areas of development, financial assistance by the institutions, methods of taxation and tax benefits.

UNIT I ENTREPRENEURSHIP 9

Entrepreneur – Types of Entrepreneurs – Difference between Entrepreneur and Intrapreneur – Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION 9

Major Motives Influencing an Entrepreneur – Achievement Motivation Training, self Rating, Business Game, Thematic Apperception Test – Stress management, Entrepreneurship Development Programs – Need, Objectives.

UNIT III BUSINESS 9

Small Enterprises – Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment – Preparation of Preliminary Project Reports – Project Appraisal – Sources of Information – Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING 9

Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, management of working Capital, Costing, Break Even Analysis, Network Analysis Techniques of PERT/CPM – Taxation – Income Tax, Excise Duty – Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS 9

Sickness in small Business – Concept, Magnitude, causes and consequences, Corrective Measures – Government Policy for Small Scale Enterprises – Growth Strategies in small industry– Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

TOTAL: 45 PERIODS

OUTCOME:

- The students will have confidence and entrepreneurial skills essential for the successful launch and scaling-up of an enterprise

TEXT BOOKS:

1. S.S.Khanka “Entrepreneurial Development” S.Chand & Co. Ltd. Ram Nagar New Delhi, 1999.
2. Kuratko & Hodgetts, “Enterprenuership – Theory, process and practices”, Thomson learning 6th edition.

REFERENCES:

1. Hisrich R D and Peters M P, “Entrepreneurship” 5th Edition Tata McGraw-Hill, 2002.
2. Mathew J Manimala,” Enterprenuership theory at cross roads: paradigms and praxis” Dream tech 2nd edition 2006.
3. Rabindra N. Kanungo “Entrepreneurship and innovation”, Sage Publications, New Delhi, 1998.
4. EDII “ Faulty and External Experts – A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development” Institute of India, Ahmadabad, 1986.

TT 8851 **BONDED FABRICS** **L T P C**
3 0 0 3

OBJECTIVES:

To enable the students to learn about the

- Fundamentals of bonded fabrics
- Different method of web formation and bonding

UNIT I FUNDAMENTALS OF BONDED FABRICS 5

Definitions and classification of bonded fabrics; fibres, fibre preparations and their characteristics for the production of bonded fabrics, uses; methods of bonded fabric production

UNIT II WEB FORMATION WITH STAPLE FIBRES 9

Production of staple-fibre web by dry and wet methods; influence of web laying methods on fabric properties; quality control of web

UNIT III MECHANICAL, CHEMICAL AND THERMAL BONDING 13

Bonded fabric production by mechanical bonding - needling, stitching, water jet consolidation; Thermal Bonding technologies; Chemical bonding – Binder polymers and bonding technologies

UNIT IV POLYMER – LAID WEB AND FABRIC FORMATION 9

Manufacture of Spun bonded fabrics, fibre orientation in spun bonded fabrics and characterization of filament arrangement; Manufacture of Melt blown fabrics – fibre formation and its attenuation; Effect of processing parameters on fabric characteristics

UNIT V FINISHING AND APPLICATION OF BONDED FABRICS 9

Dry and Wet finishing; Characterization, structure - property relationship in bonded fabrics; End uses of bonded fabrics

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course the student will be able to

- Explain different types of nonwovens and their method of production
- Explain different type of finishes applied on the fabric and their end uses
- Choose appropriate bonded technique for getting desired properties in fabric.

TEXT BOOKS:

1. Lunenschloss J., Albrecht W. and David Sharp., “Nonwoven Bonded Fabrics”, Ellis Horwood Ltd., New York, 1985.
2. Russell S., “Hand Book of Nonwovens”, Textile Institute, Manchester, 2004.
3. Chapman R., “Applications of Nonwovens in Technical Textiles”, Textile Institute, Manchester, 2010.

REFERENCES:

1. Mrstina V. and Feigl F., “Needle Punching Textile Technology”, Elsevier, New York, 1990.
2. Dharmadhikary R. K., Gilmore T. F., Davis H. A. and Batra S. K., “Thermal Bonding of Nonwoven Fabrics”, Textile Progress, Vol.26, No.2, Textile Institute Manchester,1995.
3. Jirsak O. and Wadsworth L. C., “Nonwoven Textiles”, Textile Institute, Manchester, 1999.

GE8073 **FUNDAMENTALS OF NANOSCIENCE** **L T P C**
3 0 0 3

OBJECTIVE:

- To learn about basis of nanomaterial science, preparation method, types and application

UNIT I INTRODUCTION 8

Nanoscale Science and Technology- Implications for Physics, Chemistry, Biology and Engineering-Classifications of nanostructured materials- nano particles- quantum dots, nanowires-ultra-thinfilms-multilayered materials. Length Scales involved and effect on properties: Mechanical, Electronic, Optical, Magnetic and Thermal properties. Introduction to properties and motivation for study (qualitative only).

UNIT II GENERAL METHODS OF PREPARATION 9

Bottom-up Synthesis-Top-down Approach: Co-Precipitation, Ultrasonication, Mechanical Milling, Colloidal routes, Self-assembly, Vapour phase deposition, MOCVD, Sputtering, Evaporation, Molecular Beam Epitaxy, Atomic Layer Epitaxy, MOMBE.

UNIT III NANOMATERIALS 12

Nanoforms of Carbon - Buckminster fullerene- graphene and carbon nanotube, Single wall carbon Nanotubes (SWCNT) and Multi wall carbon nanotubes (MWCNT)- methods of synthesis(arc-growth, laser ablation, CVD routes, Plasma CVD), structure-property Relationships applications-Nanometal oxides-ZnO, TiO2,MgO, ZrO2, NiO, nanoalumina, CaO, AgTiO2, Ferrites, Nanoclays-functionalization and applications-Quantum wires, Quantum dots-preparation, properties and applications.

UNIT IV CHARACTERIZATION TECHNIQUES 9

X-ray diffraction technique, Scanning Electron Microscopy - environmental techniques, Transmission Electron Microscopy including high-resolution imaging, Surface Analysis techniques-AFM, SPM, STM, SNOM, ESCA, SIMS-Nanoindentation.

UNIT V APPLICATIONS 7

NanoInfoTech: Information storage- nanocomputer, molecular switch, super chip, nanocrystal, Nanobiotechlogy: nanoprobes in medical diagnostics and biotechnology, Nano medicines, Targetted drug delivery, Bioimaging - Micro Electro Mechanical Systems (MEMS), Nano Electro Mechanical Systems (NEMS)- Nanosensors, nano crystalline silver for bacterial inhibition, Nanoparticles for sunbarrier products - In Photostat, printing, solar cell, battery.

TOTAL: 45 PERIODS

OUTCOMES:

- Will familiarize about the science of nanomaterials
- Will demonstrate the preparation of nanomaterials
- Will develop knowledge in characteristic nanomaterial

TEXT BOOKS:

1. A.S. Edelstein and R.C. Cammearata, eds., “Nanomaterials: Synthesis, Properties and Applications”, Institute of Physics Publishing, Bristol and Philadelphia, 1996.
2. N John Dinardo, “Nanoscale Charecterisation of surfaces & Interfaces”, 2nd edition, Weinheim Cambridge, Wiley-VCH, 2000.

REFERENCES:

1. G Timp, “Nanotechnology”, AIP press/Springer, 1999.
2. Akhlesh Lakhtakia,“The Hand Book of Nano Technology, Nanometer Structure, Theory, Modeling and Simulations”. Prentice-Hall of India (P) Ltd, New Delhi, 2007.

FT8012 **FABRIC SOURCING AND SAMPLING** **L T P C**
3 0 0 3

OBJECTIVES:

- To impart knowledge on sample preparation, types of samples and its quality requirements.
- To impart knowledge on raw material sourcing and sourcing concepts.

UNIT I **9**

Sample Construction: Construction of sample - basic standard of professional sewing; relationship between pattern making and the ultimate quality of finished sample; analysis of component pieces and trimmings - planning a logical garment construction sequence – economic use of fabric yardage - maintaining grain lines - interfacing, lining

UNIT II **9**

Sampling: Types of samples – pro – photo type – fit – pre-production – top – shipment – gold sealed – sales man samples etc., need and importance of the samples – quality requirements – sampling and lead time – sampling and costing – approvals

UNIT III **9**

Introduction to Souring: Procurement and outsourcing in the fashion industry - benefits and risks of outsourcing - searching, evaluating, and maintaining sources of supply - make-buy decisions - single-multiple sourcing decisions -domestic-global sourcing decisions

UNIT IV **9**

Raw Material Sourcing: Sourcing of fabrics / accessories – bought out components – markets – domestic and international markets - sourcing – definition – need for sourcing – method of sourcing – sourcing of accessories – linings – buttons – zippers – labels etc

UNIT V **9**

Sourcing Concept: Manufacturing resource planning – supply chain management – demand chain analysis – Just in Time Technology – quality specifications – inventory control – purchase orders - inspection – follow up

TOTAL:45 PERIODS

OUTCOMES:

Upon completion of this course, students shall able to know about,

- Sample preparation, types of samples and its quality requirements
- Raw material sourcing and sourcing concepts

TEXT BOOKS:

1. E.Glock Ruth and I. Kunz Grace, "Apparel Manufacturing - Sewn Product Analysis", Blackwell Scientific Publications, 1996.
2. Jeannette Jamow, Kitty G.Dickerson, "Inside the Fashion Business", Prentice-Hall of India, 1997.

REFERENCES:

1. Jacob Solinger, "Apparel Manufacturing", Handbook, VanNostrand Reinhold Company,1980.
2. Tyler J David "Materials Management in Clothing Production", 1991.
3. Herold Carr and Barbara Lathem,"The Technology of Clothing Manufacturing", 2nd Edition, Blackwell Scientific Publications, London, 1988.

MG8791 SUPPLY CHAIN MANAGEMENT L T P C
3 0 0 3

OBJECTIVE:

- To provide an insight on the fundamentals of supply chain networks, tools and techniques.

UNIT I INTRODUCTION 9

Role of Logistics and Supply chain Management: Scope and Importance- Evolution of Supply Chain -Decision Phases in Supply Chain - Competitive and Supply chain Strategies **–** Drivers of Supply Chain Performance and Obstacles.

UNIT II SUPPLY CHAIN NETWORK DESIGN 9

Role of Distribution in Supply Chain **–** Factors influencing Distribution network design **–** Design options for Distribution Network Distribution Network in Practice-Role of network Design in Supply Chain **–** Framework for network Decisions.

UNIT III LOGISTICS IN SUPPLY CHAIN 9

Role of transportation in supply chain **–** factors affecting transportations decision **–** Design option for transportation network **–** Tailored transportation **–** Routing and scheduling in transportation.

UNIT IV SOURCING AND COORDINATION IN SUPPLY CHAIN 9

Role of sourcing supply chain supplier selection assessment and contracts- Design collaboration - sourcing planning and analysis - supply chain co-ordination - Bull whip effect **–** Effect of lack of co-ordination in supply chain and obstacles **–** Building strategic partnerships and trust within a supply chain.

UNIT V SUPPLY CHAIN AND INFORMATION TECHNOLOGY 9

The role IT in supply chain- The supply chain IT frame work Customer Relationship Management **–** Internal supply chain management **–** supplier relationship management **–** future of IT in supply chain **–**E-Business in supply chain.

TOTAL: 45 PERIODS

OUTCOME:

- The student would understand the framework and scope of supply chain networks and functions.

TEXT BOOK:

1. Sunil Chopra, Peter Meindl and Kalra, **"**Supply Chain Management, Strategy, Planning, and operation**"**, Pearson Education, 2010.

REFERENCES:

1 David J.Bloomberg , Stephen Lemay and Joe B.Hanna, **"**Logistics**"**, PHI 2002.
2 James B.Ayers, **"**Handbook of Supply chain management**"**, St.Lucle press, 2000.
3 Jeremy F.Shapiro, **"**Modeling the supply chain**"**, Thomson Duxbury, 2002.
4 Srinivasan G.S, **"**Quantitative models in Operations and Supply Chain Management**"**, PHI, 2010.

FT8013 **FASHION FORECASTING** **L T P C**
3 0 0 3

OBJECTIVE:

- To impart knowledge on principles marketing, marketing research. Domestic and international market.

UNIT I **9**

Fashion market and marketing environment – market research – evaluating the collections - Fashion consumer – Consumer influence on market.

UNIT II **9**

Fashion, Fad, style – Application – Society Fashion and individual fashion – their Coordination - wardrobe.

UNIT III **9**

Applied illusions – Physical effects- Overall height - over all weight – Covering body defects by design – Visual design in Dress in Australia - Brazil – Germany - India – Japan - Nigeria.

UNIT IV **9**

Fashion marketing research – Purpose of research - research design & data sources – Sampling methods – data Collection – Forecasting Fashion – Market Segmentation - marketing mix.

UNIT V **9**

Fashion Products and its importance – Fashion Industry & new Product Development – Fashion Designers role in apparel market – Branded Products – personal labels – stores that seek the merchandise.

TOTAL: 45 PERIODS

OUTCOME:

- The students will have understanding on principles of marketing, factors affecting domestic and international market, fashion trends and consumer behaviour.

TEXT BOOKS:

1. Marian L. Davis, “Visual Design in Dress”, Prentice Hall Inc., 1976.
2. Elaine Stone,” Fashion Merchandising”, Blackwell Science Ltd., 2000.
3. Mike Easey, “Fashion Marketing”, Blackwell Science, 2002.

REFERENCE:

1. Maurice J.Johnson & Evelyn C.moore, “Apparel Product Development”, Prentice Hall Inc., 2001.

FT8014 **FASHION PORTFOLIO DEVELOPMENT** **L T P C**
3 0 0 3

OBJECTIVE:

- To enable the students understand the conceptualisation of design, design development, portfolio development and garment production

UNIT I **9**

Development of research methodology, understanding elements and principles of design choosing a theme or concept - sources of inspiration, compiling the research: sketchbook, drawing, collage, research analysis, conceptualizing the collection: development of mood board, story board and concept boards, the layout and composition.

UNIT II **9**

Selection of materials - fibres and yarns, fabric types, non-fabric textiles, future fabrics, colouring the fabric, finishing methods, surface design, decorative dye effects, printing and pattern, embroidery, fabric manipulation, three dimensional embellishments, sources of fabric – market, industry, retail, fabric properties and characteristics, creating own fabric, designing custom textiles, tradeshows.

UNIT III **12**

Design development elements ,Development and refinement of individual garments, Selecting and editing ideas to form a collection, communicating ideas: sketching and design drawing, templates, working drawings, art materials, layout and composition, Illustration, understanding the fashion figure, technical drawings, fashion illustration, CAD for fashion, colour - colour theory and colour palettes.

UNIT IV **9**

Introduction to portfolio building for fashion designers, idea storage bank, focused portfolios, specialized portfolios, diverse Market segments, presentation techniques.

UNIT V **6**

Garment production, sizing and measurements, pattern making, draping, sewing; The toile, fittings and finishing, prototype sample, costing and pricing.

TOTAL: 45 PERIODS

OUTCOME:

- The students would have knowledge on steps involved in fashion portfolio development and garment production

TEXT BOOKS:

1. Karl Aspelund, “The Design Process”, 3rd edition, Fairchild Books, 2015.
2. Erin Cadigan, “Sourcing and Selecting Textiles for Fashion”, Fairchild books, 2013.
3. Sandra Burke, “Fashion Artist - drawing techniques to portfolio presentation ”, Burke Publishing, UK, 2006

REFERENCES:

1. Simon Seivewright, Basics Fashion Design 01: Research and Design”, Fairchild Books, 2007.
2. John Hopkins “Fashion Design: The Complete Guide”, Fairchild Books, 2012.

FT8071 **BRAND MANAGEMENT** **L T P C**

3 0 0 3

OBJECTIVE:

- To introduce students to the concept of brand, brand building, branding strategies and legal issues in brand management

UNIT I **9**

Product – definition, types; product line, product mix; new product development; estimating market and sales potential, sales forecasting

UNIT II **13**

Brand – definition, evolution, importance; product vs brand; terminologies used in branding; branding – meaning, creation, challenges; brand design – understanding consumer, competition,

components, brand identity - brand naming, logos, characters, slogans, tools to maintain identity, illustrations from apparel industry

UNIT III **9**

Brand Building: brand insistence model; advertising – definition, objectives, modes, economic and ethics; non traditional marketing approach

UNIT IV **9**

Branding strategies; brand extension, brand revitalization, brand repositioning, brand recall, brand elimination, brand imitation

UNIT V **5**

Brand equity measurement systems; legal issues in brand management; global branding

TOTAL: 45 PERIODS

OUTCOME:

- The students would have knowledge on consumer behaviour, brand identity and brand equity management

TEXT BOOKS:

1. Brad Van Auken, “Branding”, Jaico Publishing House, Mumbai, India, 2010.

2. Mahim Sagar, Deepali Singh, Agrawal DP, Achintya Gupta, “Brand Management”, Ane Books India Pvt. Ltd., India, 2009.

REFERENCES:

1. Harsh V Verma, “ Brand Management”, Excel Books, New Delhi, India, 2004

2. Gordon T Kendall, “Fashion Brand Merchandising”, Fairchild Publications, New York, 2009