COMPETENCY BASED CURRICULUM

DIPLOMA
IN
FASHION TECHNOLOGY

(Duration 03 Years)
NSQF Level – 5

Under
Haryana State Board of Technical Education

Developed By

Curriculum Development Center

National Institute of Technical Teachers Training & Research

(Ministry of Education, Government of India)

Sector - 26, Chandigarh, UT, India.

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PREFACE

Learning and learning experience are the foundation of any education system. Appropriateness of education and its useful implications stand on the platform of knowledge and skill. But the knowledge and skill cannot be quantified qualitatively without ensuring learning experience. Curriculum is the pathway to select and organise learning experience. It helps the teachers to provide tangible resources, goals and objectives to learners. Curriculum acts as a catalyst to stimulate creativity, innovation, ethics, values, responsibility and many human factors. Curriculum embodies rigour and high standards and creates coherence to empower learner to meet the industrial and societal needs. Curriculum is a central guide for a teacher to plan a standard based sequence for the instructional delivery.

The industrial revolution 4.0 has forced the technical education system to reinvent the curriculum to meet the human resource requirement of the industry. The data driven systems relying on the subjects like machine-learning, Artificial Intelligence, Data Science etc are literally forcing the technical education system to offer different subjects differently to address the emerging challenges. The non-linear way of learning now facilitates students to choose path of knowledge to skill or vice-versa. The bi-directional process requires innovative curriculum design and revision. Diploma programme is now more challenging than ever. The level of skill and knowledge demanded by industry from diploma holders are highly interdisciplinary at the same time address special need. Hence, there is a need to align the curriculum to National Skill Qualification Framework (NSQF).

National Education Policy, NEP-2020 has now opened up diversities for the education system to explore and exploit to make the education relevant. The policy emphasises to inculcate value, ethics, respect to culture and society etc along with industry ready knowledge and skill among the students. The interdisciplinary nature of curriculum, academic bank of credits and integration of technology in teaching-learning envisaged in NEP-2020 make it more challenging for curriculum development. NITTTR, Chandigarh has developed the art of curriculum development over 54 years of its existence. The expertise and experience available in the institute follow time-tested and acclaimed scientific methods to design/revise curriculum. The experienced faculty members entrusted with the curriculum development or revision activities are well-versed with NSQF, NEP and Outcome based education. I am happy to note that **Haryana State Board of Technical Education, Panchkula, Haryana** reposed their confidence on this expertise to develop **AICTE/NSQF/NEP 2020** aligned curriculum for the state. This documented curriculum is an outcome of meticulous planning and discussions among renowned experts of the subject through series of workshops. The effective implementation of this curriculum supported with quality instructional resources will go a long way in infusing the learning experience among learners to make them industry ready.

Director

National Institute of Technical Teachers Training & Research, Chandigarh

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Professor & Head
Curriculum Development Center
National Institute of Technical Teachers Training & Research, Chandigarh

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1. SALIENT FEATURES

1.	Name	:	**Diploma in Fashion Technology**
2.	Duration	:	**03 Years**
3.	Hours per week	:	**35**
4.	Entry Qualification	:	**10th Pass**
5.	Student Intake	:	**As per sanctioned strength**
6.	Pattern	:	**Semester**
7.	Scheme	:	**Multi Point Entry and Exit**
8.	NSQF Level	:	**5**
9.	Theory Practical Ratio	:	**26 : 74**
10.	Project Work	:	**Minor and Major Project**
11.	In-house/Industrial Training	:	**Mandatory after First and Second Year**

2. NSQF GUIDELINES

National Skill Qualification Framework has defined total Ten Levels. Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

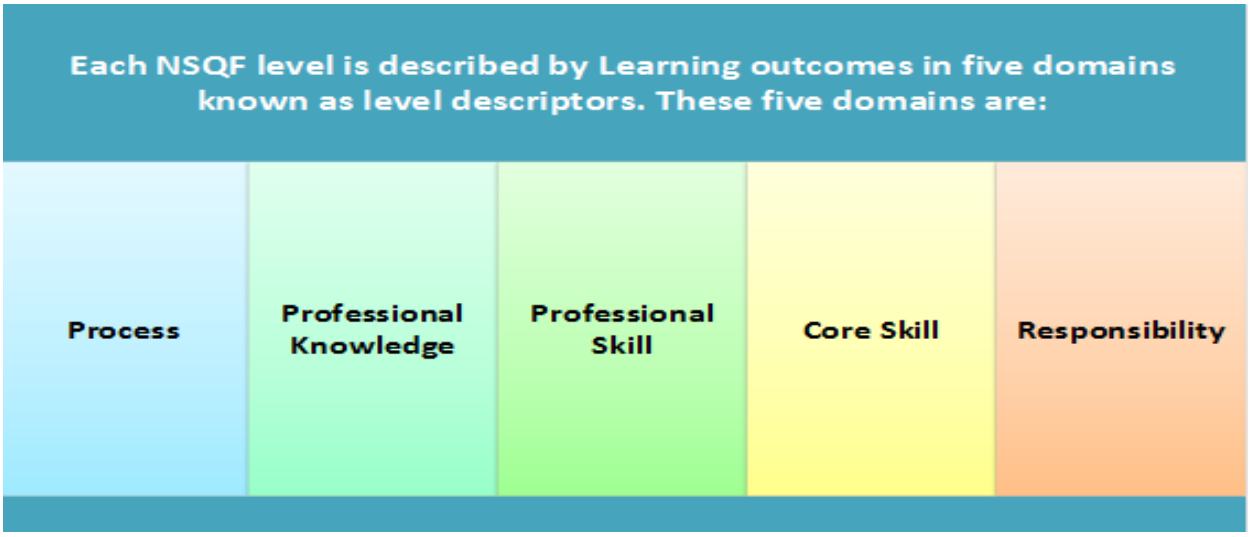

Fig1: NSQF Domains

NSQF LEVEL - 3 COMPLIANCE

The NSQF level - 3 descriptor is as follows:

Process	• Person may carry out a job which may require limited range of activities routine and predictable.
Professional Knowledge	• Basic facts, process and principle applied in trade of employment.
Professional Skill	• Recall and demonstrate practical skill, routine and repetitive in narrow range of application.
Core Skill	• Communication written and oral, with minimum required clarity, skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment.
Responsibility	• Under close supervision. Some responsibility for own work within defined limit.

Fig 2: NSQF Level – 3 Descriptor

Work requiring knowledge, skills and aptitudes at level 3 will be routine and predictable. Job holders will be responsible for carrying out a limited range of jobs under close supervision. Their work may require the completion of a number of related tasks. People carrying out these job roles may be described as “Semi skilled workers”. Individuals in jobs which require level 3 qualifications will normally be expected to be able to communicate clearly in speech and writing and may be required to use arithmetic and algebraic processes. They will be expected to have previous knowledge and skills in the occupation and should know the basic facts, processes and principles applied in the trade for which they are qualified and be able to apply the basic skills of the trade to a limited range of straightforward jobs in the occupation.

They will be expected to understand what constitutes quality in their job role and more widely in the sector or sub-sector and to distinguish between good and bad quality in the context of the jobs they are given. Job holders at this level will be expected to carry out the jobs they are given safely and securely. They will work hygienically and in ways which show an understanding of environmental issues. This means that they will be expected to take responsibility for their own health and safety and that of fellow workers and, where appropriate, customers and/or clients. In working with others, they will be expected to conduct themselves in ways which show a basic understanding of the social environment. They should be able to make a good contribution to team work.

NSQF LEVEL - 4 COMPLIANCE

The NSQF level-4 descriptor is given below:

Process	• Work in familiar, predictable, routine, situation of clear choice
Professional Knowledge	• Factual knowledge of field of knowledge or study.
Professional Skill	• Recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts.
Core Skill	• Communication written and oral, with required clarity, skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment.
Responsibility	• Responsibility for own work and learning.

Fig 3: NSQF Level – 4 Descriptor

Work requiring knowledge, skills and aptitudes at level 4 will be carried out in familiar, predictable and routine situations. Job holders will be responsible for carrying out a range of jobs, some of which will require them to make choices about the approaches they adopt. They will be expected to learn and improve their practice on the job. People carrying out these jobs may be described as "skilled workers". Individuals in jobs which require level 4 qualifications should be able to communicate clearly in speech and writing and may be required to use arithmetic and algebraic processes. They will be expected to have previous knowledge and skills in the occupation in which they are employed, to appreciate the nature of the occupation and to understand and apply the rules which govern good practice. They will be able to make choices about the best way to carry out routine jobs where the choices are clear.

They will be expected to understand what constitutes quality in the occupation and will distinguish between good and bad quality in the context of their job roles. Job holders at this level will be expected to carry out their work safely and securely and take full account of the health and safety on colleagues and customers. They will work hygienically and in ways which show an understanding of environmental issues. In working with others, they will be expected to conduct themselves in ways which show a basic understanding of the social and political environment. They should be able to guide or lead teams on work within their capability.

NSQF LEVEL - 5 COMPLIANCE

The NSQF level-5 description is given below:

Process	• Job that requires well developed skill, with clear choice of procedures in familiar context.
Professional Knowledge	• Knowledge of facts, principles, processes and general concepts, in a field of work or study.
Professional Skill	• A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.
Core Skill	• Desired mathematical skill; understanding of social, political; and some skill of collecting and organising information, communication.
Responsibility	• Responsibility for own work and learning and some responsibility for others' works and learning

Fig 4: NSQF Level – 5 Descriptor

Work requiring knowledge, skills and aptitudes at level 5 will also be carried out in familiar situations, but also ones where problems may arise. Job holders will be able to make choices about the best procedures to adopt to address problems where the choices are clear. Individuals in jobs which require level 5 qualifications will normally be responsible for the completion of their own work and expected to learn and improve their performance on the job. They will require well developed practical and cognitive skills to complete their work. They may also have some responsibility for others' work and learning. People carrying out these jobs may be described as "fully skilled workers" or "supervisors".

Individuals employed to carry out these jobs will be expected to be able to communicate clearly in speech and writing and may be required to apply mathematical processes. They should also be able to collect and organise information to communicate about the work. They will solve problems by selecting and applying methods, tools, materials and information. They will be expected to have previous knowledge and skills in the occupation, and to know and apply facts, principles, processes and general concepts in the occupation. They will be expected to understand what constitutes quality in the occupation and will distinguish between good and bad quality in the context of their work. They will be expected to operate hygienically and in ways which show an understanding of environmental issues. They will take account of health and safety issues as they affect the work they carry out or supervise.

In working with others, they will be expected to conduct themselves in ways which show an understanding of the social and political environment.

3. NATIONAL EDUCATION POLICY (NEP) - 2020

NEP 2020 aims at a comprehensive holistic education to develop all capacities of human beings - intellectual, aesthetic, social, physical, emotional, and moral - in an integrated manner. A holistic arts education will help develop well-rounded individuals that possess: critical 21st century capacities in fields across the arts, humanities, languages, sciences, social sciences, and professional, technical, and vocational fields; an ethic of social engagement; soft skills, such as communication, discussion and debate; and rigorous specialization in a chosen field or fields. Such a holistic education shall be, in the long term, the approach of all undergraduate programmes, including those in professional, technical, and vocational disciplines.

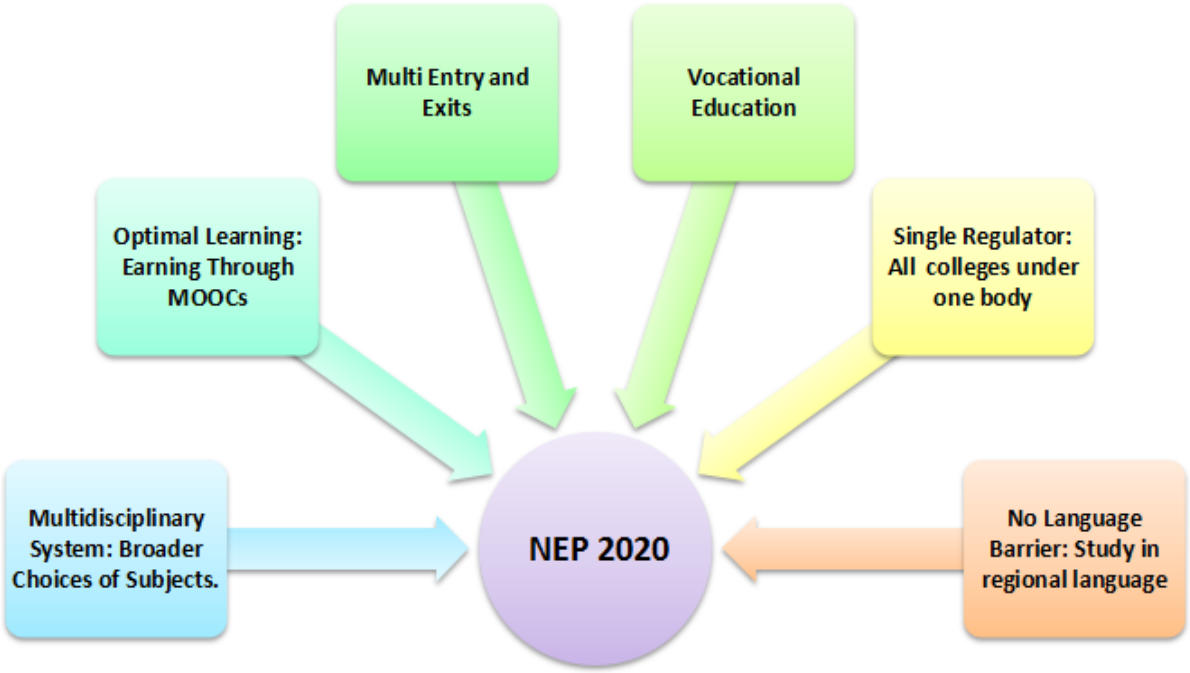

Fig 5: NEP 2020

Flexibility in curriculum and novel and engaging course options will be on offer to students, in addition to rigorous specialisation in a subject or subjects. Pedagogy for courses will strive for significantly less rote learning and an increased emphasis on communication, discussion, debate, research, and opportunities for cross-disciplinary and interdisciplinary thinking. The flexible and innovative curriculum shall emphasize on offering credit-based courses and projects in the areas of community engagement and service, environmental education and value-based education. as part of a holistic education, students will be provided with opportunities for internships with local industry, businesses, artists, crafts persons, villages and local communities, etc., as well as

research internships with faculty and researchers at their own or other HEIs or research institutions, so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability.

Effective learning requires relevant curriculum, engaging pedagogy, continuous formative assessment and adequate student support. The curriculum must be updated regularly aligning with the latest knowledge requirements and shall meet specified learning outcomes. High-quality pedagogy is then necessary to successfully impart the curricular material to students; pedagogical practices determine the learning experiences that are provided to students - thus directly influencing learning outcomes. The assessment methods have to be scientific and test the application of knowledge. Higher Education Institutes should move to a criterion-based grading system that assesses student achievement based on the learning goals for each programme, making the system fairer and outcomes more comparable. HEIs should also move away from high-stakes examinations towards more continuous and comprehensive evaluation.

4. PROGRAMME OUTCOMES

The programme outcomes are derived from five domains of NSQF Level namely Process, Professional Knowledge, Professional Skill, Core Skill, Responsibility. After completing this programme, the student will be able to:

PO1: Perform tasks in limited range of activities, familiar situation with clear choice of procedures.

PO2: Acquire knowledge of principles and processes in the field of Fashion Technology.

PO3: Develop skills to accomplish quality tasks and solve problems using methods, tools, materials and information**.**

PO4: Demonstrate skill of communication, collecting and organizing information along with knowledge of social, political and natural environment.

PO5: Take the responsibility of own works and supervises others work.

PO6: Select multidisciplinary and open subjects of own interest and perform self learning through Massive Open Online Courses.

5. DERIVING CURRICULUM AREAS FROM PROGRAMME OUTCOMES

The following curriculum areas have been derived from Programme outcomes:

Sr. No.	Programme Outcomes	Curriculum Subjects / Areas
1.	Perform tasks in limited range of activities, familiar situation with clear choice of procedures.	• Design Fundamentals • Textile Fundamentals • Industrial Garment Machinery • Knitted Garment Technology • Garment Analysis and Industrial Engineering • Sampling Room Coordination • Basic CAD in Fashion Technology • Textile Testing • Fashion Buying and Merchandising • Program Elective-I • Fabric Sourcing and Costing • Advance CAD in Fashion Technology • Programme Elective - II
2.	Acquire knowledge of principles and processes in the field of Fashion Technology.	• Pattern Fundamentals • Apparel Manufacturing • Home Textiles • Industrial Garment Machinery • Knitted Garment Technology • Apparel Production Planning, Scheduling and Quality Control • Garment Finishing • Inside Garment Industry • Program Elective-I • Garment Audit • Programme Elective - II
3.	Develop skills to accomplish quality tasks and solve problems using methods, tools, materials and information**.**	• Design Fundamentals • Basic Drafting and Sewing Workshop • Textile Fundamentals • Shop Floor Management • Advance Drafting and Assembly Workshop • Industrial Garment Machinery • Knitted Garment Technology

		• Garment Analysis and Industrial Engineering • Sampling Room Coordination • Basic CAD in Fashion Technology • Textile Testing • Fashion Buying and Merchandising • Program Elective-I • Fabric Sourcing and Costing • Garment Audit • Advance CAD in Fashion Technology • Programme Elective - II
4.	Demonstrate skill of communication, collecting and organizing information along with knowledge of social, political and natural environment.	• English and Communication Skills -I • Fundamentals of IT • Environmental Studies & Disaster Management • Industrial/In-House Training - I • English and Communication Skills II • Minor Project • Industrial Training – II • Entrepreneurship Development & Management • Industrial Internship / Major Project
5.	Take the responsibility of own works and supervises others work.	• Basic Drafting and Sewing Workshop • Shop Floor Management • Advance Drafting and Assembly Workshop • Industrial/In-House Training – I • Minor Project • Industrial Training – II • Industrial Internship / Major Project
6.	Select multidisciplinary and open subjects of own interest and perform self learning through Massive Open Online Courses.	• Multidisciplinary Elective • Open Elective

FIRST YEAR

NSQF LEVEL - 3

FIRST YEAR

6. STUDY CUM EVALUATION SCHEME

FIRST SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits (C) (L + P = C)	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr	Total	
1.1	*English &Communication Skills– I	2	2	2 + 1 = 3	40	40	80	60	60	120	200
1.2	Design Fundamentals	3	4	3 + 2 = 5	40	40	80	60	60	120	200
1.3	Pattern Fundamentals	4	-	4 + 0 = 4	40	-	40	60	-	60	100
1.4	Basic Drafting and Sewing Workshop	-	8	0 + 4 = 4	-	40	40	-	60	60	100
1.5	*Fundamentals of IT	2	4	2 + 2 = 4	40	40	80	60	60	120	200
# Student Centered Activities(SCA)		-	6	-	-	-	-	-	-	-	-
Total		**11**	**24**	**20**	**160**	**160**	**320**	**240**	**240**	**480**	**800**

* Common with other Diploma Courses.

Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India etc, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self study etc.

SECOND SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits (C) (L + P = C)	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr	Total	
2.1	Textile Fundamentals	4	2	4 + 1 = 5	40	40	80	60	60	120	200
2.2	Apparel Manufacturing	4	-	4 + 0 = 4	40	-	40	60	-	60	100
2.3	Home Textiles	3	-	3 + 0 = 3	40	-	40	60	-	60	100
2.4	Shop Floor Management	-	6	0 + 3 = 3	-	40	40	-	60	60	100
2.5	Advance Drafting and Assembly Workshop	-	8	0 + 4 = 4	-	40	40	-	60	60	100
2.6	*Environmental Studies & Disaster Management	2	-	2 + 0 = 2	40	-	40	60	-	60	100
# Student Centered Activities (SCA)		-	6	-	-	-	-	-	-	-	-
Total		**13**	**22**	**21**	**160**	**120**	**280**	**240**	**180**	**420**	**700**

* Common with other Diploma Courses

\# Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India etc, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self study etc.

Industrial/In-house Training: After 2nd semester, students shall undergo Summer Training of minimum 4 Weeks.

7. HORIZONTAL AND VERTICAL SUBJECTS ORGANISATION

Sr. No.	Subjects	Hours Per Week	
		First Semester	Second Semester
1.	English and Communication Skills – I	4	-
2.	Design Fundamentals	7	-
3.	Pattern Fundamentals	4	-
4.	Basic Drafting and Sewing Workshop	8	-
5.	Fundamentals of IT	6	-
6.	Textile Fundamentals	-	6
7.	Apparel Manufacturing	-	4
8.	Home Textiles	-	3
9.	Shop Floor Management	-	6
10.	Advance Drafting and Assembly Workshop	-	8
11.	Environmental Studies & Disaster Management	-	2
12.	Student Centered Activities	6	6
	Total	**35**	**35**

8. COMPETENCY PROFILE & EMPLOYMENT OPPORTUNITIES

In government and private sectors related to **Fashion Technology**, **"Semi Skilled workers"** are required to carry out a limited range of predictable tasks under close supervision. They are expected to communicate in written or oral with required clarity along with basic understanding of social and natural environment. They should know the basic facts, limited processes and principles relevant to Fashion Design.

Fashion Technology students after NSQF – Level 3 should be able to demonstrate the necessary skills to make a design using elements and principles of design. They should know various considerations in making of garments, incorporation of standard measurements, scope and importance of drafting and pattern making so that they are able to take the measurements, interpret the style of any given design and make the pattern. They are supposed to fabricate various components of garments such as pleats and gather, darts, tucks etc. as per measurements for mass production of all ages and sizes.

Fashion Technology students are expected to possess basic knowledge about fibers, yarns, fabric structure, dying, printing, finishing and relevant properties affecting the ultimate performance and use of fabrics by the consumer. They should have knowledge of apparel manufacturing with basic information about garment industry and its various departments. The students are expected to have detailed idea of the structure and products mix of home fashion or home textiles. They should be well aware of assembly methods, various SFC tools and general safety rules on garment shop floor. They are expected to demonstrate skills of constructing basic garments from scratch with the developed technical skills.

They are expected to recall and demonstrate practical routine and repetitive skills, in narrow range of Fashion Technology applications. They have wide scope to work in export houses, import houses, domestic industries, freelancer in different activities related to fashion technology, fashion merchandising in marketing, production and quality control units in garment manufacturing industries. They can start their own small start up in the area of marketing, sales, manufacturing and production etc.

9. PROGRAMME OUTCOMES

The programme outcomes are derived from five domains of NSQF Level – 3 namely Process, Professional Knowledge, Professional Skill, Core Skill, Responsibility. After completing this level, the student will be able to:

PO1: Carry out a task which may require limited range of predictable activities.

PO2: Acquire knowledge of Basic facts, process and principles related to fashion technology for wage and self employment.

PO3: Demonstrate practical skill in narrow range of fashion technology related applications.

PO4: Communicate in written and oral, with minimum required clarity along with basic understanding of social and natural environment.

PO5: Perform task under close supervision with some responsibility for own work within defined limit.

10. ASSESSMENT OF PROGRAMME AND COURSE OUTCOMES

Programme Outcomes to be assessed	Assessment criteria for the Course Outcomes
PO1: Carry out a task which may require limited range of predictable activities.	• Demonstrate skills in the field of design following the standard principles. • Utilize the various arrangements employed in design. • Demonstrate measurement of different body parts for pattern preparation. • Sketch basic bodice and basic garments. • Apply pattern adaptation skills in different context. • Operate and control sewing machine for garment construction. • Identify and prepare different styles of garment components. • Realize the concept of spinning and yarn properties. • Visualize fabric formation and identify basic weaves.
PO2: Acquire knowledge of Basic facts, process and principles related to fashion technology for wage and self employment.	• Identify various elements of design and their visual effects. • Classify types and importance of creativity and innovation in design. • Recognize practical applications of design. • Learn about various important body measurements. • Summarize the basic terms, types and tools related to pattern making work. • Acquire knowledge to prepare fabric prior to pattern making. • Identify and appreciate various styles of pattern components. • Interpret various styles of upper and lower basic garments. • Identify different raw material for textile production. • Learn about various textile processing activities. • Classify various defects in textile products.

	• Learn the cutting and maker planning activities. • Describe the sewing and assembly department in apparel production. • Differentiate various types of finishes used in apparel production. • Define the importance of finishing and packing activities in apparel manufacturing. • List various supporting services necessary for apparel production. • Predict the market for home textiles. • List the raw materials for home fashion. • Classify various varieties of home textiles. • Describe the advanced designs available in the field of home textiles. • Learn to create designs for home textiles.
PO3: Demonstrate practical skill in narrow range of fashion technology related applications.	• Demonstrate skills in the field of design following the standard principles. • Utilize the various arrangements employed in design. • Demonstrate measurement of different body parts for pattern preparation. • Sketch basic bodice and basic garments. • Apply pattern adaptation skills in different context. • Operate and control sewing machine for garment construction. • Identify and prepare different styles of garment components. • Realize the concept of spinning and yarn properties. • Visualize fabric formation and identify basic weaves. • Classify the structure of a garment shop floor. • Apply Short Floor Management tools in garment manufacturing. • Interpret the various job responsibilities in a garment shop floor.

	• Utilize the various management concepts in a garment shop floor. • Predict the safety and security issues in a garment shop floor. • Sketch patterns essential for making basic garments. • Perform sewing, assembling operations to convert patterns into garments. • Handle ergonomical issues faced in production of basic garments. • Apply the skill of drafting and assembling various wears. • Develop the requisite skills for an export level pattern master.
PO4: Communicate in written and oral, with minimum required clarity along with basic understanding of social and natural environment.	• Identify the nuances of Communication, both Oral and Written. • Acquire knowledge of the meaning of communication, communication process and speaking skills. • Acquire enhanced vocabulary and in-depth understanding of Grammatical Structures and their usage in the communication. • Communicate effectively with an increased confidence to read, write and speak in English language fluently. • Understand the basic components of Computers, Internet and issues of abuses/ attacks on information and computers. • Use comfortably Computer, Laptop, Mobiles, Internet Utilities and Install / Configure OS. • Assemble a PC and connect it to external devices. • Work with Office Practiced Automation Tools. • Create worksheets and Prepare presentations. • Comprehend the importance of sustainable ecosystem. • Clarify interdisciplinary nature of environmental

	issues. • Describe corrective measures for the abatement of pollution. • Identify the role of non-conventional energy resources in environmental protection. • Recognize various types of disasters.
PO5: Perform task under close supervision with some responsibility for own work within defined limit.	• Demonstrate measurement of different body parts for pattern preparation. • Sketch basic bodice and basic garments. • Apply pattern adaptation skills in different context. • Operate and control sewing machine for garment construction. • Identify and prepare different styles of garment components. • Classify the structure of a garment shop floor. • Apply Short Floor Management tools in garment manufacturing. • Interpret the various job responsibilities in a garment shop floor. • Utilize the various management concepts in a garment shop floor. • Predict the safety and security issues in a garment shop floor. • Sketch patterns essential for making basic garments. • Perform sewing, assembling operations to convert patterns into garments. • Handle ergonomical issues faced in production of basic garments. • Apply the skill of drafting and assembling various wears. • Develop the requisite skills for an export level pattern master.

11. SUBJECTS & CONTENTS

(FIRST YEAR)

FIRST SEMESTER

1.1 ENGLISH & COMMUNICATION SKILLS – I

L	P
2	2

RATIONALE

Language as the most commonly used medium of self-expression remains indispensable in all spheres of human life –personal, social and professional. This course is intended to break fresh ground in teaching of Communicative English as per the requirements of National Skill Quality Framework. This course is designed to help students to acquire the concept of communication and develop ability or skills to use them effectively to communicate with the individuals and community.

COURSE OUTCOMES

After undergoing this course, the students will be able to:

CO1: Identify the nuances of Communication, both Oral and Written.

CO2: Acquire knowledge of the meaning of communication, communication process and speaking skills.

CO3: Acquire enhanced vocabulary and in-depth understanding of Grammatical Structures and their usage in the communication.

CO4: Communicate effectively with an increased confidence to read, write and speak in English language fluently.

DETAILED CONTENTS

UNIT I

Reading

1.1 Techniques of reading: Skimming and Scanning

1.2 Extensive and Intensive Reading: Textual Study

1.3 Homecoming – R.N. Tagore

1.4 Life Sketch of Sir Mokshagundam Visvesvarayya

1.5 Life Sketch of Dr. Abdul Kalam

1.6 Narayan Murthy's speech at LBSNA, Dehradun

UNIT II

Fundamentals of Communication

2.1 Concept and Process of Communication,

2.2 Types of Communication (Verbal Communication)

2.3 Barriers to Communication

2.4 Speaking Skill: Significance and essentials of Spoken Communication

2.5 Listening Skill: Significance and essentials of Listening

UNIT III

Grammar and Usage

3.1 Nouns

3.2 Pronouns

3.3 Articles

3.4 Verbs(Main and Auxiliary)

3.5 Tenses

UNIT IV

Writing Skills

4.1 Significance, essentials and effectiveness of Written Communication

4.2 Notice Writing

4.3 Official Letters and E-mails.

4.4 Frequently-used Abbreviations used in Letter-Writing

4.5 Paragraph Writing

4.6 Netiquettes

PRACTICAL EXERCISES

1 READING

Reading Practice of lessons in the Lab Activity classes.

i. Comprehension exercises of unseen passages along with the lessons prescribed.

ii. Vocabulary enrichment and grammar exercises based on the selected readings.

iii. Reading aloud Newspaper headlines and important articles.

2 FUNDAMENTALS OF COMMUNICATION

i. Introducing oneself, others and leave- taking(talking about yourself)

ii. Just a minute (JAM) sessions: Speaking extempore for one minute on given topics

iii. Situational Conversation: Offering-Responding to offers; Congratulating; Apologising and Forgiving; Complaining; Talking about likes and dislikes, Self-introduction Mock Interviews

3 GRAMMAR AND USAGE

i. Written and Oral Drills will be undertaken in the class to facilitate holistic linguistic competency among learners.

ii. Exercises on the prescribed grammar topics.

4 WRITING SKILLS

i. Students should be given Written Practice in groups so as to inculcate team-spirit and collaborative learning .

ii. Group exercises on writing paragraphs on given topics.

iii. Opening an e-mail account, receiving and sending emails

RECOMMENDED BOOKS

1) Alvinder Dhillon and Parmod Kumar Singla, "Text Book of English and Communication Skills Vol – 2", M/S Abhishek Publications, Chandigarh.
2) V Sasikumar & PV Dhamija, "Spoken English", Tata MC Graw Hills, New Delhi, Second Edition.
3) JK Gangal, "A Practical Course in Spoken English", PHI Learning Pvt. Ltd., New Delhi.
4) NK Aggarwal and FT Wood, "English Grammar, Composition and Usage", Macmillan Publishers India Ltd., New Delhi.
5) RC Sharma and Krishna Mohan, "Business Correspondence & Report writing", Tata MC Graw Hills, New Delhi, Fourth Edition.
6) Kavita Tyagi & Padma Misra, "Professional Communication", PHI Learning Pvt. Ltd.,New Delhi.
7) Nira Konar, "Communication Skills for professionals", PHI Learning Pvt. Ltd., New Delhi.
8) Krishna Mohan & Meera Banerji, "Developing Communication Skills", Macmillan Publishers India Ltd., New Delhi, Second Edition
9) M. Ashraf Rizwi, "Effective Technical Communication", Tata MC Graw Hills, New Delhi.
10) Andrea J Rutherfoord, "Basic Communication Skills for Technology", Pearson Education, New Delhi.

INSTRUCTIONAL STRATEGY

This is practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains four units of equal weightage.

1.2 DESIGN FUNDAMENTALS

L	P
3	4

RATIONALE

The knowledge and skill related to design is essential for the students in order to develop necessary skills to make a design using elements and principles of design. This subject will enhance the creativity and innovation in students by sharing detailed idea of the whole process. This will help the students to pursue their career in the field of designing.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Classify types and importance of creativity and innovation in design.
CO2: Identify various elements of design and their visual effects.
CO3: Demonstrate skills in the field of design following the standard principles.
CO4: Utilize the various arrangements employed in design.
CO5: Recognize practical applications of design.

DETAILED CONTENTS

UNIT I

Introduction to Design

Definition of design and motif, Types of design – Structural, Decorative, Naturalistic, Stylised, Geometric, Historic and Abstract, Introduction to Creativity and Innovation.

UNIT II

Elements of Design

Lines, Types of lines- Straight: Horizontal, Vertical, Zigzag, Diagonal and Curved; Motif Shapes, Types of Shapes - Geometrical, Realistic, Stylized and Abstract; Color - Definition Concept – Hue, Value- Tints, Tones and Shade, Chroma/ Intensity, Color wheel - Primary, Secondary and Tertiary Colors, Neutral Colors, Warm and Cool Colors; Color Schemes- Related Color Schemes - Analogous, Mono-chromatic, Contrast Color Schemes - Complimentary, split complimentary, contrast, Triadic and Achromatic Color Schemes; Texture, Types – Tactile and Visual; Silhouettes, Visual effects of elements of design.

UNIT III

Principles of Design

Directional Principles – Repetition, Parallelism, Sequence, Alternation, Gradation, Transition, Radiation and Rhythm; Highlighting Principles – Concentrism, Placement, Isolation, Contrast, Emphasis; Synthesizing Principles – Proportion, Scale, Balance, Harmony, Unity.

UNIT IV

Arrangement of Design Figures

Arrangement of figures - unit-repeating design, the drop device, drops reverse designs, sateen system of distribution; Counterchange motifs, border patterns and allover patterns.

UNIT V

Application of Basic Designing

Collage and its various types – Collage, Client Board, Trend Board/ Concept Board/ Presentation Board, Mood Boards/Story Board/ Theme Board, Inspiration Board, Color Board, Fabric Board/ Swatch Board, Trim Board, Accessory Board, Illustration Board/ Design Board, Pattern Board.

PRACTICAL EXERCISES

1. Illustrate Vertical, Horizontal and Diagonal lines in garments using trims and details.
2. Illustrate Zigzag lines in garments using trims and details.
3. Illustrate Curve lines in garments using trims and details.
4. Draw a standard Color Wheel.
5. Draw a Tint and Shade Card.
6. Draw Related Color Schemes.
7. Draw Contrast Color Schemes.
8. Draw Achromatic Color Schemes.
9. Sketching of different Motif Shapes used in garments.
10. Sketching of different Silhouettes used in garments.
11. Draw any three Textures used in garments.
12. Illustrate Balance and Proportion.
13. Illustrate Rhythm and Emphasis.
14. Prepare a Mood Board.
15. Prepare a Story Board.

RECOMMENDED BOOKS

1. Kathryn McKelvey and Janine Munslow, "Fashion Design: Process, Innovation and Practice", Blackwell Publishing, USA, 2005.
2. Diane.T and Cassidy. T, "Colour forecasting" Blackwell Publishing, 2005
3. Dar, S.N., "Costumes of India and Pakistan", D.BTataporevala Sons and Co. Ltd., 1982.
4. Churye G.S, "Indian Costume", Popular Prakashan Pvt. Ltd., Bombay, 1995.
5. HatanakaKokyo Collection –"Textile arts of India", Chronide Books, 1996
6. Elizabeth Rouse, "Understanding Fashion", Blackwell Scientific Publication, Oxford, 1989.
7. Grosicki Z., "Watson's Textile Design & Color: Elementary weaves & Figure", Blackwell Science, Commerce place, 1998.
8. Gini Stephens Frings — "Fashion- from concept to consumer" Pearson Education

SUGGESTED WEBSITES

1. https://en.wikipedia.org/wiki/Fashion_accessory
2. https://vidyamitra.inflibnet.ac.in/
3. https://nptel.ac.in/courses
4. www.onlineclothingstudy.com
5. https://bharatskills.gov.in
6. www.scribd.com
7. https://www.seamwork.com/
8. http://elyon.com/gsd7a_e.htm
9. https://nift.ac.in/
10. https://ores.su/en/journals/textiles-trends/
11. https://www.clothierdesignsource.com/
12. https://fashionforgood.com/
13. https://www.learnhowtobecome.org/fashion-designer/
14. https://www.monsterindia.com/search/garment-jobs
15. https://irispublishers.com/jtsft/
16. https://www.countants.com/blogs/ai-and-machine-learning-for-fashion-industry-global-trends-benefits/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

1.3 PATTERN FUNDAMENTALS

L	P
4	-

RATIONALE

The students should know various considerations in making of garments, incorporation of standard measurements, scope and importance of drafting and pattern making so that they are able to take the measurements, interpret the style of any given design and make the pattern. The subject therefore deals with basics of pattern making and styling of garments. It facilitates them to appreciate the skills desired by industry for becoming a successful pattern master or pattern drafter.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Learn about various important body measurements.
CO2: Summarize the basic terms, types and tools related to pattern making work.
CO3: Acquire knowledge to prepare fabric prior to pattern making.
CO4: Identify and appreciate various styles of pattern components.
CO5: Interpret various styles of upper and lower basic garments.

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DETAILED CONTENTS

UNIT I

Introduction to Body Measurements

Measurements - Introduction to Standard Measurements – Need and Importance, Classification - Circumference, Horizontal and Vertical Measurements, Methods of taking measurements – Direct and Indirect; Figure Types – Normal Figure and Abnormality in Figures.

UNIT II

Pattern Making

Types: Flat Pattern Making or Drafting and Draping, Computerized Pattern Making Tools: Pins, Pin Holders, Scissors, Measuring Tapes, French Curves, Scales, Notcher, Tracing Wheel, Pattern Papers, Markers, etc, Terminology: Basic Pattern Set, Templates, Working Pattern, Production Pattern, Design Specification Sheet, Pattern Chart, Cost Sheet, Grain line, Selvage, Darts, Dart Intake, Truing and Blending, Plumb Line, Style No., Pattern Size, Pattern Manipulation or Adaptation, Seam Allowance, Ease Allowance, Empire Line, Princess Line, Pattern Grading,

Pattern Alteration, Pattern Layout, Pattern Defects, Pattern Finishing, Pattern Count, Pattern Making Principles – Dart Manipulation, Addition of Fullness and Principle of Continuity;

UNIT III

Fabric Preparation

Fabric Preparation Procedure – Inspection (skewness, bowing, slub, hole, damage, stain, weave defect, miss end or pick, etc) , Relaxation or conditioning, Shrinkage (Pre or Post), Shade Sorting, Straightening and edge cutting.

UNIT IV

Pattern Styles

Classification and Terminology of – Necklines (U, V, Round, Keyhole, sweet heart, scoop, etc) , Collars (Convertible, Non-Convertible, Peter Pan, Shawl, etc) , Sleeves (Shirt Sleeve, Kimono, Raglan, Leg-o-mutton, Puff, Etc), Yokes, Pockets, Plackets, Style lines.

UNIT V

Garment Styles

Classification and Terminology of –Tops on the basis of shape, Skirts on the basis of length and on the basis of shape and Pants on the basis of length and on the basis of fit.

RECOMMENDED BOOKS

1. Helen Joseph Armstrong, “Pattern Making for Fashion Design” Pearson Education (Singapore)Pvt. Ltd., 2005
2. Winifred Aldrich, “Metric Pattern Cutting” Blackwell Science Ltd., 1994
3. Amaden-Crawford Connie, “The Art of Fashion Draping (3rd edition)” Om Books International Publications, 2005
4. Hollen Norma R; KundelCarlyn, “Pattern making by t he flat pattern method”, 1998
5. Gillian Holman,“PatternCuttingMadeEasy”, Blackwell Scientific Publications, 1997.
6. Natalie Bray “More Dress Pattern Designing” Blackwell Scientific Publications, 1986.
7. Gerry Cooklin, “Master Patterns and Grading for Women’s Outsizes”, Blackwell Scientific Publications, 1995.
8. Gerry Cooklin, “Master Patterns and Grading for Men’s Outsize”, Blackwell Scientific Publications, 1992.
9. Jeenne Price and Bernard Zamkoff, “Grading Techniques for Modern Design” Fairchild Publications, 1990.
10. Fan J, Yu W, and Hunter L., “Clothing Appearance and Fit: Science and Technology”, Woodhead Publishing Limited, 2004

11. Ashdown S. P., “Sizing in Clothing”, Wood head Publishing Limited, 2007

SUGGESTED WEBSITES

1. www.cbseacademic.nic.in
2. https://www.education.gov.in/en/e-contents
3. https://www.clothesource.net/
4. https://www.seweasy.org/
5. https://www.sewdaily.com/
6. https://www.sewinginsight.com/
7. https://sewport.com/
8. https://atdcindia.co.in/
9. https://www.skillshare.com/browse/sewing
10. https://apparelscience.com/important-websites-and-blogs-for-apparel-and-textile-industry/
11. https://irispublishers.com/jtsft/index.php
12. https://www.pubtexto.com/journals/global-journal-of-fashion-technology-and-textile-engineering
13. https://fashnerd.com/

INSTRUCTIONAL STRATEGY

This is theoretical subject for basic fundamental knowledge and contains five units of equal weight age.

1.4 BASIC DRAFTING AND SEWING WORKSHOP

L	P
-	8

RATIONALE

The students are supposed to fabricate various components of garments such as pleats and gather, darts, tucks etc., as per measurements for mass production of all ages and sizes. This subject will develop such competencies in the students and deals with basics of garment construction technology.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Demonstrate measurement of different body parts for pattern preparation.
CO2: Sketch basic bodice and basic garments.
CO3: Apply pattern adaptation skills in different context.
CO4: Operate and control sewing machine for garment construction.
CO5: Identify and prepare different styles of garment components.

PRACTICAL EXERCISES

UNIT I

a. Locating land marks
b. Demonstration of taking measurement directly from body
c. Taking measurements from the garments

UNIT II

a. Drafting of: basic bodice block and sleeve block
b. Drafting basic skirt block
c. Drafting of A line frock
d. Drafting of Rompers

UNIT III

a. Adaptation of basic sleeve to: Puff Sleeve, Cap Sleeve, Petal Sleeve
b. Adaptation of basic Collar to: Peter Pan Collar, Convertible Collar

UNIT IV

a. Tools and equipment's used in measuring, marking, cutting, sewing and finishing of garments.
b. Parts of basic sewing machine and its operation, Sewing machine- its defects and remedies.
c. Stitch Classification – British Standard and ASTM Standards
d. Machine Control Exercise on Speed (Dry needle and Threaded Needle)
e. Paper and Fabric Exercise – Straight line, Square, Concentric Square, Curve, Circle

UNIT V

a. Seam Classification – British Standard and Federal Standards
b. Pleats and its variations
c. Darts and Tucks
d. Gathers and Shirring
e. Neckline Finishing- Shaped, binding and Biased
f. Fasteners attachment - hooks, snaps, loops, button, Velcro, zipper
g. Plackets and its variations
h. Pockets and its variations
i. Sleeves and its variations
j. Collars and its types

RECOMMENDED BOOKS

1. Mary Mathews, "Practical Clothing Construction Part I and II", Paprinpack, Madras, 2000.
2. Ruth E.Glock, Grace I. Kunz, "Apparel Manufacturing – Sewn Product Analysis", Pearson/Prentice Hall, 2005
3. Claire Shaeffer, "Sewing for the Apparel Industry", Prentice-Hall Inc, New Jersey, 2001
4. Gerry Cooklin, "Garment Technology for Fashion Designers", Blackwell Science Ltd., 2001.
5. Leila Aitken., "Step By Step Dress Making Course", BBC Books, 1992
6. Amaden. C. and Crawford, A guide to Fashion Sewing, Fairchild Publications, 2001.
7. Fan.J., Yu.W., and Hunter.L., "Clothing Appearance and Fit: Science and Technology", The Textile Institute, Manchester, 2004
8. Joseph. H andAmstrong, "Pattern Making for Fashion Design", Pearson Education Inc, 2005.
9. Sumathi,G.J, " Elements of Fashion and Apparel Design", New Age International (P) Ltd, 2005.
10. Federal standards, stitches and seams.

SUGGESTED WEBSITES

1. www.cbseacademic.nic.in
2. https://www.education.gov.in/en/e-contents
3. https://www.clothesource.net/
4. https://www.seweasy.org/
5. https://www.sewdaily.com/
6. https://www.sewinginsight.com/
7. https://sewport.com/
8. https://atdcindia.co.in/
9. https://www.skillshare.com/browse/sewing
10. https://apparelscience.com/important-websites-and-blogs-for-apparel-and-textile-industry/
11. https://irispublishers.com/jtsft/index.php
12. https://www.pubtexto.com/journals/global-journal-of-fashion-technology-and-textile-engineering
13. https://fashnerd.com/

INSTRUCTIONAL STRATEGY

This is hands on practice based workshop for development of required skills in the students. This workshop contains five units of equal weight age

1.5 FUNDAMENTALS OF IT

L	P
2	4

RATIONALE

Information technology has great influence on all aspects of life. Almost all work places and living environment are being computerized. In order to prepare diploma holders to work in these environments, it is essential that they are exposed to various aspects of information technology such as understanding the concepts of information technology and its scope, operating a computer: use of various office management tools, using internet and mobile applications etc. This course is intended to make new students comfortable with computing environment - Learning basic computer skills, learning basic application software tools, Understanding Computer Hardware and Cyber security awareness.

COURSE OUTCOMES

At the end of the course student will be able to

CO1: Understand the basic components of Computers, Internet and issues of abuses/ attacks on information and computers.

CO2: Use comfortably Computer, Laptop, Mobiles, Internet Utilities and Install / Configure OS.

CO3: Assemble a PC and connect it to external devices.

CO4: Work with Office Practiced Automation Tools.

CO5: Create worksheets and Prepare presentations.

DETAILED CONTENTS

UNIT 1

Basics of Computer

Brief history of development of computers, Definition of Computer, Block diagram of a Computer, Hardware, Software, Booting: Cold and Hot Booting, Interaction between the CPU and Memory with Input/Output devices, Function of CPU and major functional parts of CPU.

Memory, Bit, Nibble, Byte, KB, MB, GB, TB, PB, Functions of memory, Use of storage devices in a Computer, List types of memory used in a Computer, Importance of cache memory, CPU speed and CPU word length

UNIT II

Basic Internet Skills

Understanding browser, Introduction to WWW, efficient use of search engines, awareness about Digital India portals (state and national portals) and college portals. Advantages of Email, Various email service providers, Creation of email id, sending and receiving emails, attaching documents with email and drive.

Effective use of Gmail, G-Drive, Google Calendar, Google Sites, Google Sheets, Online mode of communication using Google Meet & WebEx.

UNIT III

Basic Logic building

Introduction to Programming, Steps involved in problem solving, Definition of Algorithm, Definition of Flowchart, Steps involved in algorithm development, differentiate algorithm and flowchart, symbols used in flowcharts, algorithms for simple problems, flowcharts for simple problems, Practice logic building using flowchart/algorithms

UNIT IV

Office Tools

Office Tools like LibreOffice/OpenOffice/MSOffice.

OpenOffice Writer – Typesetting Text and Basic Formatting, Inserting Images, Hyperlinks, Bookmarks, Tables and Table Properties in Writer.

Introducing LibreOffice/OpenOffice *Calc*, Working .with Cells, Sheets, data, tables, using formulae and functions, using charts and graphics.

OpenOffice Impress – Creating and Viewing Presentations, Inserting Pictures and Tables, Slide Master and Slide Design, Custom Animation.

UNIT V

Use of Social Media

Introduction to Digital Marketing – Why Digital Marketing, Characteristics of Digital Marketing, Tools for Digital Marketing, , Effective use of Social Media like LinkedIn, Google+, Facebook, Twitter, etc.: Features of Social media, Advantages and Disadvantages of Social Media.

PRACTICAL EXERCISES

This Lab course is intended to practice whatever is taught in theory class of ‘Fundamentals of Information Technology’ and become proficient in using computing environment - basic

computer skills, basic application software tools, Computer Hardware, basic logic building exercise, basic use of emails in daily life etc.

1. Browser features, browsing, using various search engines, writing search queries
2. Visit various e-governance/Digital India portals, understand their features, services offered
3. Read Wikipedia pages on computer hardware components, look at those components in lab, identify them, recognize various ports/interfaces and related cables, etc.
4. Using Administrative Tools/Control Panel Settings of Operating Systems
5. Connect various peripherals (printer, scanner, etc.) to computer, explore various features of peripheral and their device driver software.
6. Explore features of Open Office tools and MS-Office, create documents, create presentation, create spread sheet, using these features, do it multiple times
7. Working with Conversion Software like pdfToWord, WordToPPT, etc.
8. Working with Mobile Applications – Searching for Authentic Mobile app, Installation and Settings, Govt. of India Mobile Applications
9. Creating email id, sending and receiving mails with attachments.
10. Using Google drive, Google calendar
11. Create Flow chart and Algorithm for the following
    i. Addition of n numbers and display result
    ii. To convert temperature from Celsius to Fahrenheit
    iii. To find Area and Perimeter of Square
    iv. Swap Two Numbers
    v. find the smallest of two numbers
    vi. Find whether given number is Even or Odd
    vii. To print first n even Numbers
    viii. find sum of series 1+2+3+…..+N
    ix. print multiplication Table of a number
    x. generate first n Fibonacci terms 0,1,1,2,3,5…n (n>2)
    xi. sum and average of given series of numbers
    xii. Factorial of number n (n!=1x2x3x…n)
    xiii. Armstrong Number
    xiv. Find whether given number is Prime or not

RECOMMENDED BOOKS

1. R.S. Salaria, Computer Fundamentals, Khanna Publishing House

2. Ramesh Bangia, PC Software Made Easy – The PC Course Kit, Khanna Publishing House
3. Online Resources, Linux man pages, Wikipedia
4. Mastering Linux Shell Scripting: A practical guide to Linux command-line, Bash scripting, and Shell programming, by Mokhtar Ebrahim, Andrew Mallett
5. Vikas Gupta (2008), Comdex Hardware and Networking Course Kit, DreamTech press, New Delhi, India.
6. Sumitabha Das (2008), UNIX concepts and applications, 4th Edition, Tata McGraw Hill, New Delhi, India.

SUGGESTED WEBSITES / SOFTWARES

1. https://nptel.ac.in/courses/106/106/106106222/ - NPTEL Course on Modern Application Development
2. https://onlinecourses.swayam2.ac.in/aic19_de01/preview -
3. https://spoken-tutorial.org/ - Tutorials on Introduction to Computers, HTML, LibreOffice Tools, etc.
4. NOTEPAD++
5. https://tms-outsource.com/blog/posts/web-development-ide/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

SECOND SEMESTER

SECOND SEMESTER

2.1 TEXTILE FUNDAMENTALS

L	P
4	2

RATIONALE

The knowledge and skills related to textiles is essential to provide a comprehensive insight into the basic knowledge about fibers, yarns, fabric structure, dying, printing, finishing and relevant properties affecting the ultimate performance and use of fabrics by the consumer. This subject is included to provide knowledge and develop skills related to textile fundamentals.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Identify different raw material for textile production.
CO2: Realize the concept of spinning and yarn properties.
CO3: Visualize fabric formation and identify basic weaves.
CO4: Learn about various textile processing activities.
CO5: Classify various defects in textile products.

DETAILED CONTENTS

UNIT I

Textile Fiber

Definition of textile fiber, Classification of textile fibers on the basis of their origin, physical and chemical properties of – cotton, wool, silk, polyester, viscose and acrylic.

UNIT II

Textile Yarn

Elementary knowledge of spinning of cotton, definition of yarn, types of yarn – Simple: single, plied and corded, Fancy or Novelty yarns, Yarn properties – Twist and Count.

UNIT III

Textile Fabric

Definition of fabric, Introduction to types of fabric production – weaving, knitting and non-woven; Basic Weaves-Plain, Twill, Satin and Sateen.

UNIT IV

Textile Processing

Classification of textile processing, Operation sequence in chemical processing of cotton, Brief introduction to de-sizing, scouring, bleaching and mercerization of cotton, Definition of Dyeing and its classification only, Definition of printing and its classification only.

UNIT V

Textile Defects

Different types of major, minor and critical defects in textiles including weaving defects, processing defects, dyeing defects, printing defects and finishing defects.

PRACTICAL EXERCISES

1. Microscopic tests for identification of cotton, wool, silk, polyester, viscose, nylon and acrylic.
2. Burning tests for identification of cotton, wool, silk, polyester, viscose, nylon and acrylic.
3. Chemical tests for identification of cotton, wool, silk, polyester, viscose, nylon and acrylic.
4. Calculating English yarn count and its conversion into Tex and Denier.
5. Calculation of fabric shrinkage.
6. Collecting different woven samples.
7. Collecting different knitted samples.
8. Collecting different non-woven samples.
9. Preparing different processed samples.
10. Preparing different dyeing samples.
11. Preparing different print samples
12. Preparing different finishes samples.
13. Collecting different defect samples.
14. Performing fabric analysis exercise on a given fabric sample.
15. Performing fibre content analysis exercise on given fabric sample.

RECOMMENDED BOOKS

1. Allan Ormerod, Walter S. Sondhelm, Weaving-Technology and Operations, Textile Institute P ub., 1995.
2. Lord P.R. and Mohammed, Weaving: Conversion of yarn to fabric, M.H. Merrow Pub. Co Ltd., U.K., 1998.
3. Talukdar, Introduction to winding and warping, Mahajan Pub. (P) Ltd., 1998.

4. Talukdar, Wadekar and Ajgaonkar, Sizing–Materials, methods and machines, 2nd edition, Mahajan P ub. (P) Ltd., 1998.
5. Gokarneshan N., Weaving Preparation Technology, Abhishek Pub., 2009
6. Talukdar, Sriramulu and Ajgaonkar, Weaving–Machines, Mechanisms, Management, Mahajan Pub. (P) Ltd., 1998
7. Gokarneshan.N., " Fabric Structure and Design", New Age International (P) Limited, 2011.
8. Grosicki Z., "Watson's Textile Design & Color: Elementary weaves & Figure", Blackwell Science, Commerce place, 1998.
9. H.Nisbet, "Grammar of textile Design", Tarporevala sons & Co. Pvt. Ltd., 1994.
10. W.S. Murphy, "Textile weaving & Design", Abhishek Publications, 2000
11. V A Shenai Technology of Textile Processing- Vol. III, , 1975, Sevak Publications
12. V.A. Shenai, "Technology of Dyeing –Volume VI", Sevak Publications, Bombay, 2000.
13. "Chemical Processing of Textiles-I" Nodal Centre for Upgradation of Textile Education (NCUTE), 2000.
14. JohnShore,"CellulosicsDyeing",SocietyofDyersandColourists,Mumbai,2005
15. Lesile W.C. Miles, "Textile printing", Society of Dyers and Colourists,Mumbai,2003
16. "Chemical technology In the pre-treatment Processes of textiles" , S.R. Karmakar, ISBN: 0-444 50060-1 Nov,1999
17. Datye K.V. and Vaidya A. A., "Chemical Processing of Synthetic Fibres and Blends", John Wiley and Sons, Newyork,1984.
18. "Chemical Preparatory processing in Textiles" NCUTE Programmes series, march 13-14,2000.
19. "Dyes and pigments": New research, Arnold r. Lang Editor , Nova Science Publishers, Inc. New York January 8, 2013
20. "Eco–Friendly Textiles-The German Ban", NITRA Publishing Ltd., 1996.
21. "Eco-Friendly Textiles Challenges to the Textile Industry", Textile Committee. March 10 1995.
22. Manufactured Fibre Technology VB Gupta & VK Kothari ISBN: 978-94-010-6473-6
23. Physical properties of Textile Fibres WE Morton & JWS Hearle ISBN-9781845694425
24. Seyam A M, "Structural Design of Woven fabrics", Textile progress Vol.31, No: 3. Textile Institute Publication
25. Progress in Textiles: Science & Technology Vol. 1, Testing and Quality Management, V.K. Kothari, IAFL Publications, New Delhi, ISBN: 81- 901033-0-X, 1999.
26. J Hu, "Structure and mechanics of Woven fabrics", Hong Kong Polytechnic University, Wood Head Publishing Ltd, 2004.
27. Hearle JWS, Grosberg P and Backer S, "Structural mechanics of fibres, yarn and fabrics" Wiley Interscience Publishing limited, 1969.

28. Trotman E. R., "Dyeing and Chemical Technology of Textile Fibres", B.I Publishing Pvt. Ltd., New Delhi, 1994
29. Shenai V. A., "Chemistry of Dyes and Principles of Dyeing", Sevak Publications, Mumbai, 1995
30. Shore J., "Colourants and Auxiliaries: Volume I Colorants", Wood head Publishing Ltd., 2002.
31. Shenai V. A., "Technology of Printing", Sevak Publications, Mumbai, 1996

SUGGESTED WEBSITES

1. www.textileschool.com
2. www.textilelearner.blogspot.com
3. www.fashionglamourinfo.blogspot.com
4. www.glamour.com
5. www.clothingindustry.blogspot.com
6. www.wikihow.com
7. www.embroiderydesignsforfree.com
8. www.sewguide.com/hand-embroidery-stitches
9. www.en.wikipedia.org
10. www.britannica.com
11. https://textilestudycenter.com/
12. https://www.onlineclothingstudy.com/
13. https://www.howtostartaclothingcompany.com/
14. https://www.knittingindustry.com/
15. https://www.knittinghelp.com/
16. http://mytextilenotes.blogspot.com/
17. https://ttilabs.wordpress.com/
18. https://eknittingstitches.com/
19. https://nqr.gov.in/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

2.2 APPAREL MANUFACTURING

L	P
4	-

RATIONALE

The knowledge and skills related to apparel manufacturing will provide introduction about garment industry and its various departments. This subject will give knowledge about student role into various departments using developed skills and knowledge. This subject will students to acquire knowledge about cutting and marker planning, sewing, washing, finishing, packing and supporting services.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Learn the cutting and maker planning activities.
CO2: Describe the sewing and assembly department in apparel production.
CO3: Differentiate various types of finishes used in apparel production.
CO4: Define the importance of finishing and packing activities in apparel manufacturing.
CO5: List various supporting services necessary for apparel production.

DETAILED CONTENTS

UNIT I

Cutting and Marker Planning

Functions of cutting department; Preparation – Shade Sorting, Shrinkage Calculation, Marker planning – Definition, Types, Marker Utilization, Spreading – Definition, requirements, methods, Types of spread, fabric packages, Cutting – Definition, objectives, tools; Ready to Stitch – Bundling and Ticketing.

UNIT II

Sewing

Definition of sewing and assembly, Functions of sewing department, Seam types – British Standards, Seam strength; Stitch types - British standards; Sewing threads – Types, Sizes and packages;

UNIT III

Washing

Labels – Types (main, wash care, size, brand, fibre content, fit, country of origin, designer), representation of symbols used in labels, Color Matching.

UNIT IV

Finishing and Packing

Functions of finishing and packing department, Stain removal methods – Chemical and natural methods; Pressing - Purpose, types of pressing; Packaging and folding, Types of packing material

UNIT V

Supporting Services

Functions of – quality department, stores department, maintenance department, engineering department, sampling department, design studio, HR department, Merchandising department, PPC department, Security department, industrial engineering department, marketing department and General Management. (Only Functions of each department)

RECOMMENDED BOOKS

1. Harold Carr and Barbara Latham, "The Technology of Clothing Manufacture", Om Book Service, 2002.
2. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998.
3. Laing R.M., Webster J, "Stitches and Seams", The Textile Institute, Manchester, 2004.
4. Gerry Cooklin, "Garment Technology for Fashion Designers", Blackwell Science Ltd., 2001.
5. Claire Shaeffer, "Sewing for Apparel Industry", Prentice Hall, 2000.
6. Mary Mathews, "Practical Clothing Construction, Part I and II", Paperback Ed., Madras, 2000.
7. Joseph. H and Amstrong, "Pattern Making for Fashion Design", Pearson Education Inc, 2005.
8. Fan.J.,Yu.W., and Hunter.L., "Clothing Appearance and Fit: Science and Technology", The Textile Institute, Manchester 2004.
9. Leila Aitken.,"Step By Step Dress Making Course", BBC Books,2004.
10. Ruth E Glock and Grace I Kunz, "Apparel Manufacturing - Sewn Product Analysis", Prentice Hall, New Jersey, Fourth Edition, 2005.
11. Patty Brown &Janett Rice, "Ready-To-Wear Apparel Analysis", Third Edition, Prientice-Hall Inc., New Jersey.

SUGGESTED WEBSITES

1. https://www.fibre2fashion.com/
2. www.coursera.org
3. https://blog.colettehq.com/
4. https://fashion-incubator.com/
5. https://www.threadsmagazine.com/
6. http://hsbte.org.in/digital-elearning
7. http://hsbtetutor.org.in/FashionTechnology.html
8. https://gcwgandhinagar.com/econtent/view_econtent.php
9. https://nsdcindia.org/nos-listing/3
10. https://www.businessoffashion.com/articles/workplace-talent/six-fashion-careers-of-the-future
11. https://medcraveonline.com/JTEFT/
12. https://guides.loc.gov/fashion-industry/links
13. https://sscamh.com/

INSTRUCTIONAL STRATEGY

This is theoretical subject for basic fundamental knowledge of students and contains five units of equal weight age.

2.3 HOME TEXTILES

L	P
3	-

RATIONALE

The knowledge and skills related to home textiles opens the opportunities to comprehend the working of home furnishing industry. The students will get detailed idea of the structure and products mix of home fashion or home textiles. This subject will help the student to start career in Home furnishings production and marketing by acquiring necessary knowledge.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Predict the market for home textiles.
CO2: List the raw materials for home fashion.
CO3: Classify various varieties of home textiles.
CO4: Describe the advanced designs available in the field of home textiles.
CO4: Learn to create designs for home textiles.

DETAILED CONTENTS

UNIT I

Introduction

Introduction to Home Fashion, Present scenario of Home Fashion/Textile market in the domestic and international market.

UNIT II

Essential Properties

Selection of raw material and the essential characteristics of Home Textile materials on the basis of the end uses.

UNIT III

Classification & Applications

Types of Home Textiles - Table Linens, Bed Linen, Bathroom Furnishings, Kitchen Linen, Curtains and Upholstery, other draperies.

UNIT IV

Advanced Applications

Advanced fabric structures for Home Textile materials – Brocade, Damask, Gauze, Leno, Upholstery fabrics. Floor Coverings – Carpets (domestic and machine made and rugs).

UNIT V

Design Criteria and Care

Design criteria of Home Fashion/Textile material on the basis of the end uses, Care of Home Textiles.

RECOMMENDED BOOKS

1. Jay Diamond and Ellen Diamond, "Fashion Apparel, Accessories, Home Furnishings", Pearson Prentic eHall, New Jersey, 2007.
2. Hamlym, "Bed and Table linen", Octopus Publishing Group Ltd, Newyork 2001.
3. David Holloway, "The Essential Book of Home Improvement Techniques", Marshals Publications, London, 2000.
4. Emma Callery, "The Home Decorator's Colour Source Book", Apple Press Ltd, London, 2006.
5. Heather Luke, "Design and Make Cushions", Silverdale Books Ltd, Leicester, 2001.
6. Hamlym, "Curtains and Blinds", Octopus Publishing Group Ltd, Newyork, 2001.
7. Susie Johns, "A Cornucopia of Cushions", Apple Press Ltd, London, 1997.
8. James Merrell, "Living with Decorative Textiles, "Thames andHudson ltd, London, 1995.
9. Caroline Lebea, "Fabrics the Decorative Art of Textiles", Thames and Hudson Ltd, London,1994
10. Alexander.N.G., "Designing Interior Environment", Mas Court Brace Covanorich, Newyork,1972
11. Donserkery.K.G., "Interior Decoration in India", D.B.Taraporeval Sons and Co. Pvt. Ltd., 1973
12. Wingate I.B. &Mohler J.F., "Textile Fabrics & Their Selection", Prentice Hall Inc., New York, 1984.

SUGGESTED WEBSITES

1. http://www.garmenco.org/index.html
2. https://www.textileschool.com/
3. https://www.textileinstitute.org/
4. https://textilelearner.net/
5. https://indiantextilejournal.com/

6. http://vasantkothari.com/content/type/textile_gate
7. www.edx.org
8. https://www.e4ft.eu/resources-1
9. https://www.emerald.com/insight/publication/issn/0955-6222
10. https://ojs.cnr.ncsu.edu/index.php/JTATM
11. https://howtoexportimport.com/Apparel-Export-Promotion-Council-1726.aspx
12. https://www.universityoffashion.com/
13. https://www.aepcindia.com/node
14. https://www.wisdomjobs.com/e-university/garments-interview-questions.html

INSTRUCTIONAL STRATEGY

This is theoretical subject for basic fundamental knowledge of students and contains five units of equal weight age.

2.4 SHOP FLOOR MANAGEMENT

L	P
-	6

RATIONALE

After going through this subject, the students should be able to use their skills to apply in supervision of garment manufacturing at actual shop floor. This subject gives them the idea of challenges faced by supervisor and floor in charges in garment shop floor. This subject will give exposure to the students about different assembly methods, various SFC tools and general safety rules on garment shop floor.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Classify the structure of a garment shop floor.
CO2: Apply Short Floor Management tools in garment manufacturing.
CO3: Interpret the various job responsibilities in a garment shop floor.
CO4: Utilize the various management concepts in a garment shop floor.
CO5: Predict the safety and security issues in a garment shop floor.

PRACTICAL EXERCISES

UNIT I

a. To enlist the components of a garment shop floor.
b. To draw a garment shop floor layout.
c. To enlist and study the pros and cons of different assembly methods of a garment shop floor.
d. To enlist daily activities and continual activities of a garment shop floor.

UNIT II

2. To list various SFC tools for a garment shop floor along with their applications and merits-demerits.

a. Manual
b. RFID
c. BAR CODE
d. QR

UNIT III

a. To understand shop floor etiquettes for supervisor and workers.
b. To draw administrative structure of a garment shop floor along with their role and duties.

UNIT IV

a. To find out suitable batch size for garment production.
b. To prepare labour attendance sheet for a garment shop floor.
c. To prepare hourly production report for a garment shop floor.
d. To calculate daily idle time, productive time and efficiency for a garment shop floor.
e. To prepare WIP chart for a garment shop floor.
f. To calculate pitch of an assembly line and to draw a pitch-diagram.
g. To identify bottlenecks, glass walls and work out their removals in a garment shop floor.

UNIT V

a. To enlist general safety rules on a garment shop floor.
b. Operational Safety
c. Handling Safety
d. Organisational Safety
e. Passage Safety

RECOMMENDED BOOKS

1. The New Shop Floor Management by Kiyoshi Suzaki
2. Production System, Production Control, Toyota and Kata: Best Practice in Lean & Shop Floor Management by Andre Kürzel
3. Harold Carr and Barbara Latham, “The Technology of Clothing Manufacture”, Om Book Service, 2002.
4. Jacob Solinger, “Apparel Production Handbook”, Reinhold Publications, 1998.
5. Laing R.M., Webster J, “Stitches and Seams”, The Textile Institute, Manchester, 2004.
6. Gerry Cooklin, “Garment Technology for Fashion Designers”, Blackwell Science Ltd., 2001.
7. Claire Shaeffer, “Sewing for Apparel Industry”, Prentice Hall, 2000
8. Mary Mathews, “Practical Clothing Construction, Part I and II”, Paperback Ed., Madras, 2000
9. Joseph. H and Amstrong, “Pattern Making for Fashion Design”, Pearson Education Inc, 2005
10. Fan.J.,Yu.W., and Hunter.L., “Clothing Appearance and Fit: Science and Technology”, The Textile Institute, Manchester 2004.

11. Leila Aitken.,"Step By Step Dress Making Course", BBC Books,2004.
12. Ruth E Glock and Grace I Kunz, "Apparel Manufacturing - Sewn Product Analysis", Prentice Hall, New Jersey, Fourth Edition, 2005

SUGGESTED WEBSITES

1. https://onlinegarmentsacademy.blogspot.com/
2. https://tshirteng.net/
3. https://sboriskina.mit.edu/mit-courses-2020-2021
4. https://www.fabriclink.com/
5. https://www.sciencedirect.com/topics/engineering/textile-and-apparel-industry
6. https://sites.google.com/site/textileandfashiontechnology/matrix
7. https://juniperpublishers.com/ctftte/
8. https://www.scitechnol.com/fashion-technology-textile-engineering.php
9. https://www.udemy.com/courses/design/fashion/?search-query=fashion+design
10. https://www.oxfordhomestudy.com/courses/fashion-courses-online/fashion-designing-online-courses-free
11. https://www.pmkvyofficial.org/Apparel_Made_ups_Home_Furnishing_Sector_Skill_Council.aspx
12. http://texmin.nic.in/
13. https://textiledetails.com/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject for development of required skills in the students. This subject contains five units of equal weight age.

2.5 ADVANCE DRAFTING AND ASSEMBLY WORKSHOP

L	P
-	8

RATIONALE

This workshop will develop knowledge and skills in students to construct basic garments from scratch with the developed technical skills. It will provide actual hands on practice related to garment manufacturing in an export assembly line. In this workshop students will hands on exposure of drafting and assembly of basic skirt, T-shirt, women top, shorts and men shirt.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Sketch patterns essential for making basic garments.
CO2: Perform sewing, assembling operations to convert patterns into garments.
CO3: Handle ergonomical issues faced in production of basic garments.
CO4: Apply the skill of drafting and assembling various wears.
CO5: Develop the requisite skills for an export level pattern master.

PRACTICAL EXERCISES

UNIT I

Drafting and assembly of basic skirt**.**

UNIT II

Drafting and assembly of basic T-shirt.

UNIT III

Drafting and assembly of women top.

UNIT IV

Drafting and assembly of basic shorts.

UNIT V

Drafting and assembly of men shirt.

RECOMMENDED BOOKS

1. Helen Joseph and Armstrong, "Pattern Making for Fashion Design", Pearson Education, 2005.
2. Winifred Aldrich, "Metric Pattern Cutting for Men's Wear", Blackwell Science, 2000.
3. Winifred Aldrich, "Metric Pattern Cutting for Women's Wear", Blackwell Science, 2000.
4. Winifred Aldrich, "Metric Pattern Cutting for Children's Wear and Baby Wear", 3rd Edition, Black well Science, 2001.
5. Singer, "Sewing Pants That Fit", Cowles Creative Publishing Inc., 1989.
6. McKelvey Kathryn, "Fashion Source Book", Black well Science, 1994
7. Gerry Cooklin, "Garment Technology for Fashion Designers", Black well Science, 2000.
8. Claire Shaeffer, "Fabric Sewing Guide", Chilton Book Company - Radnor, Pennsylvenia.

SUGGESTED WEBSITES

1. www.intertek.com
2. www.wrapcompliance.org
3. http://oms.bdu.ac.in/ec/new-courses1.php?
4. www.youtube.com
5. https://dontmemorise.com/
6. https://ndl.iitkgp.ac.in/
7. http://epgp.inflibnet.ac.in/
8. https://in.apparelresources.com/
9. https://www.tandfonline.com/toc/tfdt20/current
10. https://www.astm.org/Standards/textile-standards.html
11. http://www.apparel-merchandising.com/
12. https://www.denimsandjeans.com/
13. https://www.fabric.com/blog/

INSTRUCTIONAL STRATEGY

This is hands on practice based workshop for development of required skills in the students. This workshop contains five units of equal weight age.

2.6 ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT

L	P
2	-

RATIONALE

A diploma holder must have knowledge of different types of pollution caused due to industrial and construction activities so that he/she may help in balancing the ecosystem and controlling pollution by various control measures. The course is intended to provide a general concept in the dimensions of environmental pollution and disasters caused by nature beyond the human control as well as the disasters and environmental hazards induced by human activities with emphasis on disaster preparedness, response and recovery.

COURSE OUTCOMES

After undergoing the subject, the student will be able to:

CO1: Comprehend the importance of sustainable ecosystem.
CO2: Clarify interdisciplinary nature of environmental issues.
CO3: Describe corrective measures for the abatement of pollution.
CO4: Identify the role of non-conventional energy resources in environmental protection.
CO5: Recognize various types of disasters.

DETAILED CONTENTS

UNIT I

Introduction

1.1 Basics of ecology, eco system- concept, and sustainable development, Sources, advantages, disadvantages of renewable and nonrenewable energy.
1.2 Rain water harvesting
1.3 Deforestation – its effects & control measures

UNIT II

Air and Noise Pollution

2.1 Air Pollution: Source of air pollution. Effect of air pollution on human health, economy, Air pollution control methods.

2.2 Noise Pollution: Source of noise pollution, Unit of noise, Effect of noise pollution, Acceptable noise level, Different method of minimizing noise pollution.

UNIT III

Water and Soil Pollution

3.1 Water Pollution: Impurities in water, Cause of water pollution, Source of water pollution. Effect of water pollution on human health, Concept of DO, BOD, COD. Prevention of water pollution- Water treatment processes, Sewage treatment. Water quality standard.

3.2 Soil Pollution :Sources of soil pollution, Effects and Control of soil pollution, Types of Solid waste- House hold, Industrial, Agricultural, Biomedical, Disposal of solid waste, Solid waste management E-waste, E – waste management

UNIT IV

Impact of Energy Usage on Environment

Global Warming, Green House Effect, Depletion of Ozone Layer, Acid Rain. Eco-friendly Material, Recycling of Material, Concept of Green Buildings, Concept of Carbon Credit & Carbon footprint.

UNIT V

Disaster Management

A. Different Types of Disaster:

Natural Disaster: such as Flood, Cyclone, Earthquakes and Landslides etc.

Man-made Disaster: such as Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea Rail & Road), Structural failures(Building and Bridge), War & Terrorism etc.

B. Disaster Preparedness:

Disaster Preparedness Plan

Prediction, Early Warnings and Safety Measures of Disaster

Psychological response and Management (Trauma, Stress, Rumour and Panic)

RECOMMENDED BOOKS

1. Environmental Studies by S.C. Sharma & M.P. Poonia, Khanna Publishing House, New Delhi
2. Environmental and Pollution Awareness by Sharma BR; Satya Prakashan, New Delhi.
3. Environmental Pollution by Dr. RK Khitoliya; S Chand Publishing, New Delhi
4. Environmental Studies by Erach Bharucha; University Press (India) Private Ltd., Hyderabad.

5. Environmental Engineering and Management by Suresh K Dhamija; S K Kataria and Sons, New Delhi.
6. E-books/e-tools/relevant software to be used as recommended by AICTE/BTE/NITTTR, Chandigarh.
7. Disaster Management by Dr. Mrinalini Pandey, Wiley India Pvt. Ltd.
8. Disaster Science and Management by Tushar Bhattacharya, McGraw Hill Education (India) Pvt. Ltd.

INSTRUCTIONAL STRATEGY

In addition to theoretical instructions, different activities pertaining to Environmental Studies and Disaster Management like expert lectures, seminars, visits etc. may also be organized This subject contains five units of equal weightage.

SECOND YEAR

NSQF LEVEL - 4

12. STUDY AND EVALUATION SCHEME

THIRD SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits L+P= C	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr	Total	
3.1	Industrial/In-House Training - I	-	2	0+1=1	-	40	40	-	60	60	100
3.2	Industrial Garment Machinery	4	4	4+2=6	40	40	80	60	60	120	200
3.3	Knitted Garment Technology	2	4	2+2=4	40	40	80	60	60	120	200
3.4	Apparel Production Planning, Scheduling and Quality Control	4	-	4+0 =4	40	-	40	60	-	60	100
3.5	Garment Analysis and Industrial Engineering	-	6	0+3=3	-	40	40	-	60	60	100
3.6	Sampling Room Coordination	-	6	0+3=3	-	40	40	-	60	60	100
	# SCA	-	3	-	-	-	-	-	-	-	-
	Total	**10**	**25**	**21**	**120**	**200**	**320**	**180**	**300**	**480**	**800**

Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India, Electoral Literacy, Motor Vehicles (Driving) Regulations 2017 etc., games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self-study etc.

FOURTH SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits (C) L + P = C	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr	Total	
4.1	*English and Communication Skills - II	2	2	2+1=3	40	40	80	60	60	120	200
4.2	Basic CAD in Fashion Technology	-	8	0+4=4	-	40	40	-	60	60	100
4.3	Textile Testing	-	8	0+4=4	-	40	40	-	60	60	100
4.4	Garment Finishing	3	-	3+0=3	40	-	40	60	-	60	100
4.5	Open Elective (MOOCs^{+}/Offline)	2	-	2+0=2	40	-	40	60	-	60	100
4.6	Minor Project	-	8	0+4=4	-	40	40	-	60	60	100
# Student Centered Activities (SCA)		-	2	-	-	-	-	-	-	-	-
Total		**7**	**28**	**20**	**120**	**160**	**280**	**180**	**240**	**420**	**700**

* Common with other Diploma Courses.

\+ Assessment of Open Elective through MOOCs shall be based on assignments out of 100 marks.

\# Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India, Electoral Literacy, Motor Vehicles (Driving) Regulations 2017 etc., games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self-study etc.

Industrial Training: After 4th Semester, students shall undergo Industrial Training of 4 Weeks.

13. HORIZONTAL AND VERTICAL SUBJECTS ORGANISATION

Sr. No.	Subjects/Areas	Hours Per Week	
		Third Semester	Fourth Semester
1.	Industrial/In-House Training - I	2	-
2.	Industrial Garment Machinery	8	-
3.	Knitted Garment Technology	6	-
4.	Apparel Production Planning, Scheduling and Quality Control	4	-
5.	Garment Analysis and Industrial Engineering	6	-
6.	Sampling Room Coordination	6	
7.	English and Communication Skills - II	-	4
8.	Basic CAD in Fashion Technology	-	8
9.	Textile Testing	-	8
10.	Garment Finishing	-	3
11.	Open Elective (MOOCs+/Offline)	-	2
12.	Minor Project	-	8
13.	Student Centered Activities	3	2
	Total	**35**	**35**

14. COMPETENCY PROFILE & EMPLOYMENT OPPORTUNITIES

Government and private sectors related to **Fashion Technology** require **skilled manpower** to work in familiar, predictable, routine situations of clear choice. They are expected to have factual knowledge of fashion technology field. They are expected to communicate with required clarity. Students after completing level 4 shall have knowledge of basic arithmetic, algebraic principles and basic understanding of social and natural environment. They are expected to recall and demonstrate skills in narrow range of applications using appropriate rules and tools to maintain quality.

Skilled workers will be responsible for carrying out a range of jobs, some of which will require them to make choices about the approaches they adopt. They will be expected to learn and improve their practice on the job. They should know what constitutes quality in the occupation and should distinguish between good and bad quality in the context of their job roles. Skilled worker at this level will be expected to carry out their work safely and securely and take full account of the health and safety on colleagues and customers. They should work hygienically and in ways which show an understanding of environmental issues. In working with others, they will be expected to conduct themselves in ways which show a basic understanding of the social and political environment.

Fashion Technology students after completing NSQF Level – 4 are expected to have good theoretical knowledge of Apparel Production Planning, Scheduling and Quality Control. They are also expected to have good theoretical exposure of garment finishing. They are also expected to have good practical experience in Garment Analysis, Industrial Engineering, Sampling Room Coordination and textile testing. At this level, students should also have theoretical and practical knowledge of Industrial Garment Machinery and Knitted Garment Technology. Students at this level should be well familiar with basics of Computer Aided Design for Fashion Technology They are also expected to handle small projects related to fashion technology industries at this level.

Fashion Technology students have wide scope to work in export houses, import houses, domestic industries, freelancer in different activities related to fashion technology, fashion merchandising in marketing, production and quality control units in garment manufacturing industries. They can start their own small startup in the area of marketing, sales, manufacturing and production etc.

15. PROGRAMME OUTCOMES

The programme outcomes are derived from five domains of NSQF Level – 4 namely Process, Professional Knowledge, Professional Skill, Core Skill, Responsibility. After completing this level, the student will be able to:

PO1: Work in familiar, predictable, routine situation of clear choice.

PO2: Acquire factual knowledge in the field of fashion technology for employment.

PO3: Demonstrate routine and repetitive skills in narrow range of applications using appropriate rules and tools for quality.

PO4: Communicate with required clarity along with social and natural environment understanding.

PO5: Perform tasks with responsibility for own work and learning.

PO6: Select open elective of own interest to develop self-learning habit through online courses.

16. ASSESSMENT OF PROGRAMME AND COURSE OUTCOMES

Programme Outcomes to be assessed	Assessment criteria for the Course Outcomes
PO1: Work in familiar, predictable, routine situation of clear choice.	• Identify sewing machines employed in industry. • Realize the core sewing elements of sewing machine. • Detect various defects in sewing and need of machine maintenance. • Realize basic concepts and features of knitted fabric. • Visualize the manufacturing of knitted garments. • Resolve the handling issues of knitted fabric during production of garments. • Identify and take decision on knitted defects. • Practice the quality control skills and its development. • Identify the various types of defects in garment production. • Apply the industrial engineering principles employed in garment industry. • Analyze a given garment for production planning and technical support. • Select suitable work aids to improve ease of production. • Plan a given garment for production feasibility and viability in a production unit. • Calculate plant's efficiency and cost of production. • Perform the planning and management of a sampling department. • Prepare essential documents mandatory for sampling coordination. • Handle the inspection and testing of samples for sample improvement. • Take Buyer and Merchandiser feedback for sample development.

	• Maintain a proper documentation for a sampling room. • Realize the conditions of testing facility. • Evaluate and test yarn and fabric. • Describe the hand and comfort related evaluation of fabric. • Implement the testing techniques on fabric to check end use of finished garment. •
PO2: Acquire factual knowledge in the field of fashion technology for employment.	• Learn the basic functioning of industrial sewing machine. • Study the need of work aids and safety attachments in sewing machine. • Comprehend detail concepts of weft knitted fabrics. • Learn the basic production terms and understand garment production systems. • Study the importance and structure of PPC in garment industry. • Explore the third party audit role in garment manufacturing and the issue of compliance and social audits. • Realize the role of computer applications in the field of fashion. • Handle CorelDraw tools and apply them in fashion technology applications. • Apply various Adobe Photoshop tools in fashion technology applications. • Develop textile motif with the advent of computer support. • Visualize various applications of CAD in garment designing. • Learn basic objectives and technology in garment finishing • Comprehend detail concepts of stain removals and dry cleaning.

	• Study the commercial garment washes. • Explain various value additions by means of garment finishes. • Acquire knowledge to take decision on quality aspects of garment finishes. •
PO3: Demonstrate routine and repetitive skills in narrow range of applications using appropriate rules and tools for quality.	• Identify sewing machines employed in industry. • Realize the core sewing elements of sewing machine. • Detect various defects in sewing and need of machine maintenance. • Realize basic concepts and features of knitted fabric. • Visualize the manufacturing of knitted garments. • Resolve the handling issues of knitted fabric during production of garments. • Identify and take decision on knitted defects. • Practice the quality control skills and its development. • Identify the various types of defects in garment production. • Apply the industrial engineering principles employed in garment industry. • Analyze a given garment for production planning and technical support. • Select suitable work aids to improve ease of production. • Plan a given garment for production feasibility and viability in a production unit. • Calculate plant's efficiency and cost of production. • Perform the planning and management of a sampling department. • Prepare essential documents mandatory for sampling coordination. • Handle the inspection and testing of samples for sample improvement. • Take Buyer and Merchandiser feedback for

	sample development. • Maintain a proper documentation for a sampling room. • Realize the role of computer applications in the field of fashion. • Handle CorelDraw tools and apply them in fashion technology applications. • Apply various Adobe Photoshop tools in fashion technology applications. • Develop textile motif with the advent of computer support. • Visualize various applications of CAD in garment designing. • Realize the conditions of testing facility. • Evaluate and test yarn and fabric. • Describe the hand and comfort related evaluation of fabric. • Implement the testing techniques on fabric to check end use of finished garment.
PO4: Communicate with required clarity along with social and natural environment understanding.	• Develop required competencies for effective communication and presentation. • Communicate effectively with an increased confidence; read, write and speak in English language fluently. • Comprehend special features of format and style of formal communication through various modes. • Write a Report, Resume, make a Presentation, Participate in GDs and Face Interviews • Illustrate use of communication to build a positive self-image through self-expression and develop more productive interpersonal relationships. • Write the minor project report effectively. • Present the minor project report using PPT.
PO5: Perform tasks with responsibility	• Understand the working environment of

for own work and learning.	industries. • Take necessary safety precautions and measures. • Learn about present and future requirement of industries. • Work in team for solving industrial problems • Develop required competencies and skills for relevant industries. • Select the minor project according to the need of relevant industries. • Work as a team member for successful completion of minor project. • Acquire Life Long Learning skills.
PO6: Select open elective of own interest to develop self-learning habit through online courses.	• State the basic concepts and principles about the subject of interest. • Perform in a better way in the professional world. • Select and learn the subject related to own interest. • Explore latest developments in the field of interest. • Develop the habit of self-learning through online courses.

17. SUBJECTS & CONTENTS

(SECOND YEAR)

THIRD SEMESTER

3.1 INDUSTRIAL / IN – HOUSE TRAINING - I

L	P
-	2

RATIONALE

Industrial training / In – house training will help the students to understand the working environment of relevant industries. The student will learn to work in team to solve the industrial problems. It will also give exposure about the present and future requirements of the relevant industries. This training is very important for development of required competencies and skills for employment and start– ups.

COURSE OUTCOMES

After undergoing the training, the students will be able to:

CO1: Understand the working environment of industries
CO2: Take necessary safety precautions and measures.
CO3: Learn about present and future requirement of industries.
CO4: Work in team for solving industrial problems
CO5: Develop competencies and skills required by relevant industries.
CO6: Develop writing, speaking and presentations skills.

PRACTICAL EXERCISES

1. Report writing based on industrial training.
2. Preparation of Power Point Slides based on industrial training and presentation by the candidate.
3. Internal Evaluation based on quality of Report, PPT preparation, PPT presentation and answer to queries.
4. External Evaluation based on quality of Report, PPT preparation, PPT presentation and answer to queries.

GUIDELINES

Students will be evaluated based on Industrial training / In – house training report and their presentation using Power Point about the knowledge and skills gained during the training. The Head of the Department will depute faculty coordinators by assigning a group of students to each. The coordinators will mentor and guide the students in preparing the PPTs for final presentation. The following performance parameters are to be considered for assessment of the students out of 100 marks:

	Parameter	**Weightage**
i	Industrial / In-house assessment of the candidate by the trainer	40%
ii	Report Writing	20%
iii	Power Point Presentation	20%
iv	Viva-voce	20%

3.2. INDUSTRIAL GARMENT MACHINERY

L	P
4	4

RATIONALE

The students are expected to know various types of machinery and equipment used in manufacturing of garments. They should be able to operate and maintain the machinery and rectify the common defects. The subject intends to develop such skills in the students that can equip them to face any challenge of sewing and assembly in garment export house.

COURSE OUTCOMES

After undergoing this subject, the students will be able to:

CO1: Identify sewing machines employed in industry.

CO2: Learn the basic functioning of industrial sewing machine.

CO3: Study the need of work aids and safety attachments in sewing machine.

CO4: Realize the core sewing elements of sewing machine.

CO5: Detect various defects in sewing and need of machine maintenance.

DETAILED CONTENTS

UNIT I

Sewing Machines

Sewing Machine Classification on the basis of – Stitch Type, Machine Bed, Specialised Functions, Number of needles, Power source, Programmability, Motor type; Five Applications in garment assembly of following machines –SNLS (Single Needle Lock Stitch), DNLS (Double Needle Lock Stitch), SNCS (Single Needle Chain Stitch), MNCS (Multi Needle Chain Stitch), FOA (Feed Off the Arm), FL (Flat Lock), 3TOL (3 Thread Over Lock) and BTK (Bartack).

UNIT II

Single Needle Lockstitch (SNLS)

Part list with functions of SNLS industrial machine, Schematic diagram of SNLS

UNIT III

Sewing Machine Work Aids and Safety Attachments

Need of work aids; Classification of work aids; Need of safety attachments, Classification of safety attachments; Safety measures for operator

UNIT IV

Sewing Elements

Six major elements of sewing; Basic diagram of sewing needle with functions of each part, Needle Classification – on the basis of sewing machines and needle point; Needle size and fabric type relation; Feed mechanism;

UNIT V

Sewing Defects, Maintenance and Future Scenario

Different types of sewing defects; Need of Preventive and Corrective maintenance of sewing machines; Effects of Industry 4.0 in Garment industry

PRACTICAL EXERCISES

1. Draw a neat diagram of single needle lockstitch (SNLS) machine with all important parts and demonstration of their functions.
2. Draw a neat diagram of single needle chain stitch (SNCS) machine with all important parts and demonstration of their functions.
3. Draw a neat diagram of Bartack machine (BTK) with all important parts and demonstration of their functions.
4. Demonstration of buttonhole machine sewing machine.
5. Demonstration of button attachment sewing machines.
6. Draw a neat diagram of 3 thread overlock (3TOL) machine with all important parts and demonstration of their functions.
7. Draw a neat diagram of flat lock (FL) machine with all important parts and demonstration of their functions.
8. Draw a neat diagram of hook set of SNLS.
9. Draw a neat diagram of different types of folders.
10. Draw a neat diagram of sewing needle.
11. Draw a neat diagram of different types of machine bed.
12. Draw a neat diagram of class 100 and 200 Stitches.
13. Draw a neat diagram of class 300 stitches.

14. Draw a neat diagram of class 400 stitches.
15. Draw a neat diagram of class 500 stitches.

RECOMMENDED BOOKS

1. Carr, H. and Latham, B., 'The Technology of Clothing Manufacture', Wiley-Blackwell, 2009.
2. Claire, S., 'Sewing for the Apparel Industry', New Jersey, Prentice Hall, 2001.
3. Solinger, J., 'Apparel Manufacturing Handbook', Van Nostrand Reinhold, New York, 1995
4. Cooklin, G., "Garment Technology for Fashion Designers", Blackwell Science Ltd., 2001.
5. Laing, R.M. and Webster, J., "Stitches and Seams", The Textile Institute, Manchester, 1999.
6. Burns, L.D., Bryant, N.G., 'Business of Fashion – Designing, Manufacturing and Marketing,' Fairchild New York, 2008
7. Fan, J., "Engineering Apparel Fabrics and Garments", Wood Head Publishing Limited, 2012.

SUGGESTED WEBSITES

1. https://industrialsewingmachine.global.brother/en-ap
2. https://garmentsmerchandising.com/garment-machine-function/
3. https://www.iigm.in/
4. https://www.onlineclothingstudy.com/2018/05/machinery-needed-for-garment.html
5. https://www.dcrindustrialsewingmachinery.co.uk/
6. https://jukiindia.com/
7. https://www.duerkopp-adler.com/products/industrial-sewing-machines/clothing-applications-apparel/overview/#
8. https://www.pfaff.com/en-in/
9. http://www.unionspecial.com/
10. https://www.bernina.com/en-IN/Home-India-en

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the theory class should be practiced in the Lab regularly as per practical list for development of required skills in the students. This subject contains five units of equal weight age.

3.3 KNITTED GARMENT TECHNOLOGY

L	P
2	4

RATIONALE

This subject plays very important role to familiarize the fashion technology students about the latest developments in knitted garment manufacturing and their design features. This subject will focus on the latest trend in knitted garment manufacturing. The students will be able to explore the growing knitwear industry along with its functions.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Realize basic concepts and features of knitted fabric.
CO2: Comprehend detail concepts of weft knitted fabrics.
CO3: Visualize the manufacturing of knitted garments.
CO4: Resolve the handling issues of knitted fabric during production of garments.
CO5: Identify and take decision on knitted defects.

DETAILED CONTENTS

UNIT I
Knitting Introduction

Definition of -Knitting, Wales, Courses, Face and Back; Comparison between weft and warp knitting, Comparison between flat and circular weft knitting, comparison of knitted and woven fabrics

UNIT II
Weft Knitting

Detail study of parts and functions of flat weft knitting machine; Schematic representation of circular weft knitting machine, Properties and uses of weft knits – Plain, rib, interlock and purl; Knitting stitches – Knit, Miss and Tuck, Parts and basic knitting action of – a) Latch needle, b) Bearded needle c) Compound needle

UNIT III

Knitted Garments

Knitted Garments – Classification on the basis of production - a) Fully cut b) Stitched shaped cut c) Fully fashioned d) Integral (Note: Introduction, Importance and production sequence); Suitable stitches for knitted garments (402, 406, 407, 602, 603, 604, 605, 607, 608)

UNIT IV

Handling

Issues in knitted fabric handling during garment manufacturing, Effect of loop length and shape on fabric properties

UNIT V

Defects

Critical, major and minor defects classification in knitwear, Issue of skewness in knitted fabric

PRACTICAL EXERCISES

1. Draw and explain the functions of different parts of flat weft knitted machine.
2. Draw and explain the functions of different parts of circular knitted machine.
3. Draw the needle movements of latch needle knitting.
4. Draw the needle movements of bearded needle knitting.
5. Draw the needle movements of compound needle knitting.
6. Draw the cam assembly diagram for flat bed knitting machine.
7. Draw the cam assembly diagram for tuck and float stitches.
8. Collect the samples of warp knits and write down their applications.
9. Collect the samples of weft knits and write down their applications.
10. Demonstrate flat weft knitting machine.
11. Draw the production sequence of knitted T-shirt.
12. Draw the production sequence of knitted Polo shirt.
13. Draw the production sequence of knitted Track suit.
14. Draw the production sequence of knitted shorts.
15. Draw the production sequence of socks.

RECOMMENDED BOOKS

1. Grosicki Z., ‘Watson’s Textile Design & Color: Elementary weaves & Figure’, Blackwell Science, Commerce place, 1998.

2. Spencer, D., 'Knitting Technology', Pergamon Press, Oxford 2005.
3. Anbumani, N., 'Knitting – Fundamentals, Machines, Structures and Developments', NewAge International Publishers, 2010.
4. Ajgaonkar, D. B., 'Principles of Knitting', Universal Publishing Corporation, Mumbai, 1998.
5. Iyer, C., Mammel, B., and Schach, W., 'Circular knitting', Meisenbach GmbH, Bamberg, 1995.
6. BrackenBury, 'Knitted Clothing Technology', Om Books Service, 1999.
7. Anbumani, N., 'Knitting – Fundamentals, Machines, Structures and Developments', New Age International Publishers, 2010.

SUGGESTED WEBSITES

1. https://www.textileworld.com/textile-world/features/2020/05/innovations-in-knitting-2/
2. https://www.sciencedirect.com/topics/engineering/knitting-technology
3. https://textilelearner.net/seamless-knitting-technology-benefits-and-limitations/
4. https://www.fibre2fashion.com/industry-article/7047/seamless-garment-technology
5. https://www.researchgate.net/publication/294517520_New_trends_in_knitting_garment_technology
6. https://apparelresources.com/technology-news/manufacturing-tech/seamless-knitwear/
7. https://www.shimaseiki.com/wholegarment/business/
8. https://www.knittingindustry.com/knitwear/wholegarment-the-future-of-knitting-available-today/
9. https://www.stoll.com/en/company/stoll-global/india/
10. https://www.textileschool.com/251/knitted-fabrics-and-types/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

3.4 APPAREL PRODUCTION PLANNING, SCHEDULING AND QUALITY CONTROL

L	P
4	-

RATIONALE

Fashion technology students at this level are required to assist in controlling production and quality of the garments on the shop floor. They are also required to supervise erection, installation and maintenance of equipment including material handling and undertake work-study for better utilization of resources. They are also expected to lead a team of workers and motivate them towards realization of organizational objectives.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Learn the basic production terms and understand garment production systems.
CO2: Study the importance and structure of PPC in garment industry.
CO3: Practice the quality control skills and its development.
CO4: Explore the third party audit role in garment manufacturing and the issue of compliance and social audits.
CO5: Identify the various types of defects in garment production.

DETAILED CONTENTS

UNIT I

Apparel Production

Definitions of - production, productivity, efficiency, WIP, Inventory, bottleneck, pitch and line balancing; Apparel production types –Progressive Bundle System (PBS), Modular Production System(MPS) and Unit Production System(UPS).

UNIT II

Production Planning and Control (PPC)

PPC- Meaning, Objectives, Procedure and Elements (Material, Method, Machine, Manpower, Routing, Estimating, Loading, Scheduling, Dispatching, Inspection, Evaluating and Cost control).

UNIT III

Quality Control

Quality – definition, importance; quality control, 7 tools of quality control; Quality Assurance; Quality Standards; Inspection – Definition, inspection-loop, raw material inspection, in-process inspection, final inspection, comparability checks; 4-points system; Care labeling of apparel and textiles – American care labeling system

UNIT IV

Inspection & Audits

Final inspection/ Audit; Acceptance Quality Level (2.5) and comparison of different levels; Importance of compliance in garment industry; Introduction to Third Party Audit Organisation in India – SGS/ BeaureauVeritas/ Intertek

UNIT V

Defects Classification

Critical, Major and Minor defects in Garments, Introduction to terms- Tolerance Limits, Rejected and Surplus, Relation of defects percentage and cost of quality.

RECOMMENDED BOOKS

1. Garg, R.K, and Sharma, V., 'Production Planning and Control Management', Dhanpat Rai Publishing, 2003.
2. Solinger, J.,'Apparel Production Handbook', Reinhold Publications, 1998.
3. Telsang, M., 'Industrial Engineering and Production Management', S Chand & Company Limited, 2008.
4. Bheda, R.,' Managing Productivity of Apparel Industry', CBI publishers and distributors, New Delhi, 2002.
5. Tyler, D.J.,' Material Management in Clothing Production', Prentice Hall, New Jersey, 1991.
6. Carr, H. and Latham, B., 'The Technology of Clothing Manufacture', Wiley-Blackwell, 2009.
7. Cooklin, G., 'Introduction to Clothing Manufacture', Blackwell Science Ltd., 2005.
8. Cooklin, G., 'Garment Technology for Fashion Designers', Om Books service, 1997.
9. Churter, A.J., 'Introduction to Clothing Production Management', Oseney Mead, 2001.

SUGGESTED WEBSITES

1. https://www.onlineclothingstudy.com/2011/12/functions-of-production-planning-and.html

2. https://apparelresources.com/technology-news/manufacturing-tech/scheduling-production/

3. https://www.linkedin.com/pulse/what-production-planning-garment-industry-oshima-official?trk=pulse-article_more-articles_related-content-card

4. https://fashion2apparel.com/functions-production-planning-and-control-in-garment-industry/

5. https://decisionbrain.com/leading-apparel-manufacturer/

6. https://thefashionstarter.com/2022/01/26/production-planning-in-textile-industry%EF%BF%BC/

7. https://www.slideshare.net/Disha0208/production-planning-and-control-231750976

8. https://www.managementstudyguide.com/production-planning-and-control.htm

9. https://www.123helpme.com/essay/Importance-Of-Production-Planning-In-Garment-Production-FCZY86NRD26

10. https://textilelearner.net/basic-procedure-of-production-planning-textile-industry/

11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is theoretical subject for basic fundamental knowledge and contains five units of equal weight age.

3.5. GARMENT ANALYSIS AND INDUSTRIAL ENGINEERING

L	P
-	6

RATIONALE

After going through this subject, the students should be able to analyze a garment to understand the various inputs involved in its construction. The practice of garment analysis and industrial engineering is essential to meet the productivity along with quality in any industry. The student will be able to follow routine industrial practices to achieve desired garment productivity.

COURSE OUTCOMES

After undergoing the subject, students will be able to:

CO1: Apply the industrial engineering principles employed in garment industry.
CO2: Analyze a given garment for production planning and technical support.
CO3: Select suitable work aids to improve ease of production.
CO4: Plan a given garment for production feasibility and viability in a production unit.
CO5: Calculate plant's efficiency and cost of production.

PRACTICAL EXERCISES

UNIT I

OPERATION BULLETIN

a. Preparation of Operation Breakdown of a given garment style.
b. Preparation of Machines requirement of a given garment style.
c. Preparation of Helping Operations of a given garment style.

UNIT II

SEAMS AND STITCHES

a. Study different Seam types as per Federal Standards.
b. Study different Stitch types as per Federal Standards and importance of S.P.I.
c. Calculation of Thread consumption of a given style.

UNIT III

WORK AIDS AND ERGONOMICS

a. Preparation of Work aids and attachment requirement of a given style.
b. Identifying significant features of a given style.

c. Practical aspects of ergonomics in garment production.

UNIT IV

TIME AND MOTION STUDY

a. Calculation of SMV and SAM on the basis of Time Study and Pitch diagram for line balancing.
b. Improvement of production method on the basis of Motion Study.
c. Introduction to GSD, Pro-Sew, etc Software and their applications in Garment Analysis.

UNIT V

PERFORMANCE

a. Calculation of standard targets per operation for a given production line.
b. Estimation of initial cost of production of a given garment.
c. Calculation of unit efficiency for a given production figures.

RECOMMENDED BOOKS

1. Garg, R.K., and Sharma, V., 'Production Planning and Control Management', Dhanpat Rai Publishing, 2003.
2. Solinger, J., 'Apparel Production Handbook', Reinhold Publications, 1998.
3. Telsang, 'Industrial Engineering and Production Management', S. Chand & Company Limited, 2008.
4. Bheda, R., 'Managing Productivity of Apparel Industry', CBI publishers and distributors, New Delhi 2002.
5. Tyler, D.J., ' Material Management in Clothing Production', Prentice Hall, New Jersey,1991.
6. Carr, H. and Latham, B., 'The Technology of Clothing Manufacture', Wiley-Blackwell, 2009.
7. Cooklin, G., 'Introduction to Clothing Manufacture', Blackwell Science Ltd., 2005.
8. Cooklin, G., 'Garment Technology for Fashion Designers', Om Books service, 1997.
9. Churter, A.J., 'Introduction to Clothing Production Management', Oseney Mead, 2001.
10. Khanna, O. P. and Sarup, A., 'Industrial Engineering and Management', Dhanpat Rai Publications, New Delhi, 2005.
11. Kanwaty, G., 'Introduction to Work Study', ILO, Geneva, 1989.
12. Enrick, N.L., 'Industrial Engineering Manual for Textile Industry', Wiley Eastern (P) Ltd., New Delhi, 1988.

RECOMMENDED BOOKS

1. https://www.onlineclothingstudy.com/2011/03/industrial-engineering.html
2. https://www.fibre2fashion.com/industry-article/9393/industrial-engineering-an-essential-in-apparel-manufacturing
3. https://onlinegarmentsacademy.blogspot.com/2019/08/industrial-engineering-ie-apparel.html
4. https://ordnur.com/apparel/industrial-engineering-ie-in-apparel-industry/
5. https://textilelearner.net/industrial-engineering-department-for-apparel-production/
6. https://garmentsmerchandising.com/process-flow-chart-of-industrial-engineering-ie/
7. https://apparelresources.com/business-news/manufacturing/concept-note-on-new-series-on-industrial-engineering-in-apparel-industry/
8. https://www.goldnfiber.com/2019/07/importance-of-industrial-engineering-in-apparel-industry.html
9. https://methodsapparel.com/blog/workstudy-garment-industry-industrial-engineering/
10. https://www.slideshare.net/ShivamSagar13/industrial-engineering-in-sewing-department
11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is hands on practice based subject for development of required skills in the students. This workshop contains five units of equal weight age

3.6 SAMPLING ROOM COORDINATION

L	P
-	6

RATIONALE

After going through this subject, the students should be able to learn and apply the skills essential for a sample coordinator of a garment export house. It enables student to counter the challenges of sample development in a garment export house. It induces necessary skills so that students can co-ordinate with merchandiser and buyer for timely completion of samples.

COURSE OUTCOMES

After undergoing the subject, students will be able to:
CO1: Perform the planning and management of a sampling department.
CO2: Prepare essential documents mandatory for sampling coordination.
CO3: Handle the inspection and testing of samples for sample improvement.
CO4: Take Buyer and Merchandiser feedback for sample development.
CO5: Maintain a proper documentation for a sampling room.

PRACTICAL EXERCISES

UNIT I
SAMPLE ROOM

a. To prepare a sample room plan.
b. To prepare a review of previous designs and sample developed to sort out relevance to new designs.
c. Records of problem during previous approval process.

UNIT II
DOCUMENTATION

a. To prepare a Trim Card for a given sample.
b. To prepare a Sample Work Order Sheet for a given sample.

c. To prepare a Critical Operations Sheet for a given sample and shop floor feedback and Industrial Engineering feedback.

UNIT III

INSPECTION

a. To prepare a Quality Inspection Report for a given sample and suggest improvements.
b. To prepare a Test Fit Report for a given sample and suggest improvements.
c. Needle Advisory and other ITL advisory report as per Buyer's requirement.

UNIT IV

SAMPLE DEVELOPMENT

a. To prepare a Buyer's Comment Report and Approvals Record for a given sample.
b. To enlist different types of samples and their applications in sampling of a garment style.
c. To calculate fabric consumption on the basis of mini marker or First Pattern for a given garment style.
d. To prepare size set grade points and grade rules.
e. To prepare a final Process Chart for all value additions performed for a given sample.
f. Applications of Computer embroidery or any other value addition in plant or outsourced.

UNIT V

RECORDS

To prepare a final Season-Counter Sample report for sampling room record.

RECOMMENDED BOOKS

1. Johnson, M.J., and Moore, E.C., 'Apparel Product Development', Second Edition, Prentice Hall Upper saddle river, New Jersey, 2001.
2. Glock, R.E., and Kunz, G.I., 'Apparel Manufacturing - Sewn Product Analysis', Prentice Hall, New Jersey, Fourth Edition, 2005.
3. McKelvey, K., and Munslow, J., 'Fashion Design: Process, Innovation and Practice', Blackwell Publishing, USA, 2005.
4. Armstrong, H.J., 'Pattern Making for Fashion Design', Pearson Education, 2005.

SUGGESTED WEBSITES

1. https://www.onlineclothingstudy.com/2021/11/process-flow-chart-of-sampling-section.html
2. https://www.fibre2fashion.com/industry-article/6969/sampling-in-garment-exports-and-its-importance
3. https://techpacker.com/blog/manufacturing/12-types-of-garment-samples-you-should-know-about-for-apparel-production/
4. https://garmentsmerchandising.com/sampling-department-responsibilities/
5. https://textilescommittee.nic.in/sites/default/files/course-content/6.%20QP-Sampling%20Coordinator,%20AMH%20Q1801.pdf
6. https://garment.dony.vn/19-departments-and-its-functions-at-a-garment-factory/
7. https://www.tucareers.com/ncocareers/7543.5001
8. https://autogarment.com/sample-manager/
9. http://textilemerchandising.com/top-12-samples-apparel-industry/
10. https://www.aeempire.com/sample-development-process-in-apparel-industry/
11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is hands on practice based subject for development of required skills in the students. This subject contains five units of equal weight age

FOURTH SEMESTER

4.1 ENGLISH AND COMMUNICATION SKILL - II

L	P
2	2

RATIONALE

Communication II moves a step further from Communication Skills I and is aimed at enhancing the linguistic competency of the students. Language as the most commonly used medium of self-expression remains indispensable in all spheres of human life – personal, social and professional. This course is intended to make fresh ground in teaching of Communicative English as per the requirements of National Skill Quality Framework.

COURSE OUTCOMES

After undergoing this course, the learners will be able to:

CO1: Communicate effectively with an increased confidence; read, write and speak in English language fluently.

CO2: Comprehend special features of format and style of formal communication through various modes.

CO3: Write a Report, Resume, make a Presentation, Participate in GDs and Face Interviews

CO4: Illustrate use of communication to build a positive self-image through self-expression and develop more productive interpersonal relationships.

DETAILED CONTENTS

UNIT I

Reading

1.1 Portrait of a Lady - Khushwant Singh

1.2 The Doctor's Word by R K Narayan

1.3 Speech by Dr Kiran Bedi at IIM Indore2007 Leadership Concepts

1.4 The Bet - by Anton Chekov

UNIT II

Effective Communication Skills

2.1 Modern means of Communication (Video Conferencing, e- mail, Teleconferencing)

2.2 Effective Communication Skills: 7 C's of Communication
2.3 Non-verbal Communication – Significance, Types and Techniques for Effective Communication
2.4 Barriers and Effectiveness in Listening Skills
2.5 Barriers and Effectiveness in Speaking Skills

Unit III

Professional Writing

3.1 Correspondence: Enquiry letters, placing orders, complaint letters
3.2 Report Writing
3.3 Memos
3.4 Circulars
3.5 Press Release
3.6 Inspection Notes and tips for Note-taking
3.7 Corrigendum writing
3.8 Cover Letter

UNIT IV

Grammar and Vocabulary

4.1 Prepositions
4.2 Conjunctions
4.3 Punctuation
4.4 Idioms and Phrases: A bird of ill omen, A bird's eye view, A burning question, A child's play, A cat and dog life, A feather in one's cap, A fish out of water, A shark, A snail's pace, A snake in the grass, A wild goose chase, As busy as a bee, As faithful as dog, Apple of One's eye, Behind one's back, Breath one's last, Below the belt, Beat about the bush, Birds of a feather flock together, Black Sheep, Blue blood, By hook or crook, Chicken hearted, Cut a sorry figure ,Hand in glove, In black and white, In the twinkling, In full swing ,Is blind as a bat, No rose without a thorn, Once in a blue moon, Out of the frying pan in to the fire, know no bounds ,To back out, To bell the cat, To blow one's trumpet, To call a spade a spade, To cut one's coat according to one's cloth, To eat humble pie, To give ear to, To have a thing on one's finger tips, To have one's foot in the grave, To hold one's tongue, To kill two birds with one stone, To make an ass of oneself, To put two and two together, To the back bone, Turn coat, ups and downs.
4.5 Pairs of words commonly misused and confused: Accept-except, Access-excess, Affect-effect, Artificial- artful, Aspire-expire, Bail-bale, Bare-bear, Berth-birth, Beside-besides,

Break-brake, Canvas-canvass, Course- coarse, Casual-causal, Council-counsel, Continual-continuous, Coma-comma, Cue- queue, Corpse- corps-core, Dairy-diary, Desert-dessert, Dual-duel, Dew- due, Die-dye, Draft- draught-drought, Device-devise, Doze-dose, Eligible-illegible, Emigrant- immigrant, Envelop-envelope, Farther-further, Gate-gait, Goal-goal, Human-humane, Honorable-honorary, Hail-hale, Hair-heir-hare, Industrial-industrious, Impossible- impassable, Idle-idol-ideal, Lose-loose, Later-latter, Lesson-lessen, Main-Mane, Mental-mantle, Metal-mettle, Meter-metre, Oar-ore, Pray-prey, Plain-plan, Principal - principle, Personal- personnel, Roll- role, Route-rout- roote, Stationary-stationery, Union- unity, Urban- urbane, Vocation- vacation, Vain- vein-vane, Vary- very.

4.6 Translation of Administrative and Technical Terms in Hindi or Mother tongue: Academy, Abandon, Acting in official capacity, Administrator, Admission, Aforesaid, Affidavit, Agenda, Alma Master, Ambiguous, Appointing Authority, Apprentice, Additional, Advertisement, Assistant, Assumption of charge, Assurance, Attested copy, Bonafide, Bond, Cashier, Chief Minister, Chief Justice Clerical error, Commanding ,Officer, Consent, Contractor, corruption, Craftsman, Compensation, Code, Compensatory allowance, Compile, Confidential letter, Daily Wager, Data, Dearness allowance, Death - Cum Retirement, Dispatch, Dispatch Register, Disciplinary, Disciplinary Action, Disparity Department, Dictionary, Director, Director of Technical Education, Earned Leave, Efficiency Bar, Estate, Exemption, Executive Engineer, Extraordinary, Employment Exchange, Flying Squad, General Body, Head Clerk, Head Office, High Commission, Inconvenience, Income Tax, Indian Assembly Service, Justify, Legislative Assembly, Negligence, Officiating ,Office Record, Office Discipline, On Probation, Part Time, Performance, Polytechnic, Proof Reader Precautionary, Provisional, Qualified, Regret, Responsibility, Self-Sufficient, Senior, Simultaneous ,Staff, Stenography ,Superior, Slate, Takeover, Target Data Technical Approval, Tenure, Temporary, Timely Compliance, Under Investigation, Under Consideration, Verification, Viva-voce, Write off, Working Committee, Warning, Yours Faithfully , Zero Hour.

UNIT V

Employability Skills

5.1 Presentation Skills: How to prepare and deliver a good presentation

5.2 Telephone Etiquettes

5.3 Importance of developing employable and soft skills

5.4 Resume Writing: Definition, Kinds of Resume, Difference between Bio-data and Curriculum Vitae and Preparing a Resume for Job/ Internship

5.5 Group discussions: Concept and fundamentals of GD, and learning Group Dynamics.

5.6 Case Studies and Role Plays

PRACTICAL EXERCISES

1. Reading Practice of the above lessons in the Lab Activity classes.
2. Comprehension exercises of unseen passages along with the given lessons.
3. Vocabulary enrichment and grammar exercises based on the above selective readings.
4. Situational Conversation: Requesting and responding to requests; Expressing sympathy and condolence.
5. Warning; Asking and giving information.
6. Getting and giving permission.
7. Asking for and giving opinions.
8. A small formal and informal speech.
9. Seminar.
10. Debate.
11. Interview Skills: Preparing for the Interview and guidelines for success in the Interview and significance of acceptable body-language during the Interview.
12. Written Drills will be undertaken in the class to facilitate a holistic linguistic competency among learners.
13. Participation in a GD, Functional and Non-functional roles in GD, Case Studies and Role Plays
14. Presentations, using audio-visual aids (including power-point).
15. Telephonic interviews, face to face interviews.
16. Presentations as Mode of Communication: Persuasive Presentations using multi-media aids.
17. Practice of idioms and phrases on: Above board , Apple of One's eye , At sea, At random, At large, A burning question, A child's play, A wolf in sheep's clothing, A deal, Breath one's last, Bid fair to, Beat about the bush, Blue Blood, Big Gun, Bring to Book, Cut a sorry figure, Call names, Carry weight, Dark Horse, Eat Humble pie, Feel small, French leave, Grease the palm, Go against the grains, Get One's nerves, Hard and Fast, Hue and Cry, Head and ears, In full swing, Jack of all trades, know no bounds, kiss the dust, Keep an eye on, Lion's share, learn by rote, Null and void, on the cards, Pull a long face, Run amuck, Right and Left, Rain on Shine, Small talk, Take to one's heels, Tooth and nail, to take by storm, , Wet blanket, Yearn for.

RECOMMENDED BOOKS

1. Alvinder Dhillon and Parmod Kumar Singla, "Text Book of English and Communication Skills Vol – 1, 2", M/s Abhishek Publications, Chandigarh.
2. J Sethi, Kamlesh Sadanand & DV Jindal, "Course in English Pronunciation", PHI Learning Pvt. Ltd., New Delhi.
3. Wren and Martin, "High School English Grammar and Composition" .
4. NK Aggarwal and FT Wood, "English Grammar, Composition and Usage", Macmillan Publishers India Ltd., New Delhi.
5. RC Sharma, and Krishna Mohan, "Business Correspondence & Report Writing", (4^{th} Edition), by Tata MC Graw Hills, New Delhi.
6. Varinder Kumar, Bodh Raj & NP Manocha, "Business Communication Skills", Kalyani Publisher, New Delhi.
7. Kavita Tyagi & Padma Misra, "Professional Communication", PHI Learning Pvt. Ltd., New Delhi.
8. Nira Konar, "Communication Skills for Professionals", PHI Learning Pvt. Ltd., New Delhi.
9. Krishna Mohan & Meera Banerji, "Developing Communication Skills", (2^{nd} Edition), Macmillan Publishers India Ltd., New Delhi.
10. M. Ashraf Rizwi, "Effective Technical Communication", Tata MC Graw Hills, New Delhi.
11. Andrea J Rutherford, "Basic Communication Skills for Technology", Pearson Education, New Delhi.

INSTRUCTIONAL STRATEGY

This is practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required communication skills in the students. Emphasis should be given on practicing of communication skills. This subject contains five unit of equal weight age.

4.2 BASIC CAD IN FASHION TECHNOLOGY

L	P
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RATIONALE

After going through this subject, the fashion technology students should be able to appreciate the use of computer applications in the field of fashion designing. With the advent of latest technology in the field of fashion along with the aid of computer they will be able to learn and apply various tools in number of applications related to fashion technology.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:
CO1: Realize the role of computer applications in the field of fashion.
CO2: Handle CorelDraw tools and apply them in fashion technology applications.
CO3: Apply various Adobe Photoshop tools in fashion technology applications.
CO4: Develop textile motif with the advent of computer support.
CO5: Visualize various applications of CAD in garment designing.

DETAILED CONTENTS

UNIT I

Introduction to different CAD Software in the field of fashion technology – Adobe Photoshop, Corel Draw, Illustrator, Gerber, Lectra, Tukatech, Assyst, Ned Graphics, Color Matters, Koledo, etc.

UNIT II

Detailed study of tools of Corel Draw - Pick tools, Edit shape tools, Crop tools, Zoom tools, Curve tools, Drawing tools, Rectangle tools, Ellipse tools, Shape tools, Text tools, Dimension tools, Connector tools, Effect tools, Transparency tool, Eyedropper tools, Fill tools.

UNIT III

Detailed study of tools of Adobe Photoshop – Selection tools, Crop and slice tools, Measuring tools, Retouching tools, Painting tools, Drawing and type tools, Navigation tools.

UNIT IV

Design and develop motifs – Abstract, Geometric, Naturalistic and Historic.

UNIT V

Application of tools of Corel Draw and Adobe Photoshop in Garment Designing and development.

RECOMMENDED BOOKS

1. Taylor, P., 'Computer in the Fashion Industry', Heinernann Professional Pub, London, 1990.
2. Beazley, A., and Bond, T., 'Computer Aided Pattern Design and product development', Blackwell publishers, UK, 2004.
3. Lazear, S., 'Adobe Photoshop for Fashion Design', Pearson, 2007.
4. Taylor, P., 'Computer in the Fashion Technology', Om Book Service, 2007.
5. Aldrich, W., 'CAD in Clothing and Textiles', Blackwell Science Ltd., 2014.
6. Chavez, C., and Faulkner, A., 'Adobe Photoshop Classroom in a Book: The Official Training Workbook', Adobe Paperback, 2021.
7. Bain, S., 'CorelDraw 12: The Official Guide', McGraw-Hill, 2004.
8. Lazear, S., 'Adobe Photoshop for Fashion Design', Pearson, 2007.
9. Taylor, P., 'Computer in the Fashion Technology', Om Book Service, 2007.
10. Aldrich, W., 'CAD in Clothing and Textiles', Blackwell Science Ltd., 2014.

SUGGESTED WEBSITES

1. https://textilelearner.net/application-of-cad-in-textile/
2. https://www.academia.edu/29420550/The_Use_Of_CAD_in_The_Textile_Industry_docx
3. https://helpx.adobe.com/in/photoshop/using/tools.html
4. https://www.photoshopessentials.com/basics/photoshop-tools-toolbar-overview/
5. https://www.geeksforgeeks.org/beginners-guide-to-photoshop-tools/
6. http://product.corel.com/help/CorelDRAW/540111148/CorelDRAW-en/CorelDRAW-Toolbox.html
7. https://www.educba.com/coreldraw-tools/

8. https://www.slideshare.net/JancypriyaM/corel-draw-tools
9. https://textilelearner.net/list-of-cad-cam-software/
10. https://reach-tech.com/fashion-apparel-garment-clothing-cad-software-reach.html
11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and practical exercises should be practiced in the lab regularly for development of required skills using CorelDraw and Adobe Photoshop in the students. This subject contains five units of equal weightage.

4.3 TEXTILE TESTING

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RATIONALE

After going through this subject, the fashion technology students at this level should be able to comprehend the importance of textile analysis and evaluation in garment manufacturing industries. They subject will help the students in understanding the relation of testing parameters and final durability of fashion products.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:
CO1: Realize the conditions of testing facility.
CO2: Evaluate and test yarn and fabric.
CO3: Describe the hand and comfort related evaluation of fabric.
CO4: Implement the testing techniques on fabric to check end use of finished garment.

PRACTICAL EXERCISES

UNIT I

Definition and techniques - random and biased sampling. Sampling techniques for fiber, yarn and fabric; Standard conditions for testing samples – RH and temperature for testing, procedure to maintain the standard atmospheric condition.

UNIT II

Yarn count: Beasley balance. Importance and influence of count. Factors affecting yarn count.Fabric thickness and weight tester. Crimp – Influence of crimp on fabric properties, Shirley crimp tester. Tensile strength tester - raveled strip method, grab methods. Tear strength tester. Ballistic strength tester -hydraulic bursting strength tester. Fabric abrasion resistance - Martindale abrasion tester. Pilling - I.C.I pillbox tester.

UNIT III

Fabric Drape - Drape meter. Fabric Stiffness - Shirley Stiffness tester, Fabric crease

resistance.Fabric Stretch properties. Air permeability tester. Moisture absorbency and wickability, Gram/Square Meter and Fabric thickness. Fabric pH.

UNIT IV

Colour fastness testing -washing fastness, rubbing fastness, light fastness. Assess the textiles using colour matching cabinet booth under standard lights, Standard light source (Primary, Secondary, Tertiary).

UNIT V

Seam strength and seam slippage testing. Peel bond strength testing- snap/button pull strength testing and zipper fastness testing. Apparel dimensional stability - spirality, skewing.

RECOMMENDED BOOKS

1. Chakraborty, J. N., 'Fundamentals and Practices in colouration of textiles', Woodhead Publishing India Pvt Ltd, Second edition, 2014.
2. Pandey, R., 'Textile computer colour matching and quality decision make easy', Kindle edition, 2012.
3. Elliot, B., Grover, D.S., and Hamby, 'Handbook of Textile Testing and Quality Control', WillyIndian Edition, 2011.
4. Booth, J.E., 'Principles of Textile Testing', CBS Publishers and Distributors, 2002.
5. Saville, B.P., 'Physical Testing of Textiles', Woodhead Publishing Limited, 1999.

SUGGESTED WEBSITES

1. https://www.hqts.com/textile-testing-guide/
2. https://www.intertek.com/bangladesh/academy/textile-test-methods/
3. https://study.com/academy/lesson/what-is-textile-testing-methods-importance.html
4. https://humiditycontrol.com/what-is-textile-testing/
5. https://onlinecourses.swayam2.ac.in/cec22_te01/preview
6. https://www.aatcc.org/
7. https://www.sgs.com/en-in
8. https://www.bureauveritas.co.in/

9. http://nissenken.in/

10. https://nptel.ac.in/courses/116102029

11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is hands on practice based subject for development of required skills in the students. This subject contains five units of equal weight age

4.4 GARMENT FINISHING

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RATIONALE

The development of new technologies in garment processing plays vital role in giving different experiences to customers by the mean of finishes and it is the need of the hour today. This subject focuses on the various technical processing of garments carried out in the industry to give final attractive finish and feel.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:
CO1: Learn basic objectives and technology in garment finishing
CO2: Comprehend detail concepts of stain removals and dry cleaning.
CO3: Study the commercial garment washes.
CO4: Explain various value additions by means of garment finishes.
CO5: Acquire knowledge to take decision on quality aspects of garment finishes.

UNIT I

Introduction

Objectives and classification of garment finishes.

UNIT II

Popular Garment Finishes

Wash-n-wear, Durable Press, Antimicrobial Finish, Elastomeric Finish, Soil Release and UV Protection.

UNIT III

Popular Garment Washes

Objectives, Stone Wash, Acid Wash, Enzyme Wash, Tinting, Softener Wash, Rinse Wash.

UNIT IV

Garment Care

Objective, Laundering procedures for cotton, linen, woollen, silks and synthetics, Classification of stains and stains removers, Principle of dry cleaning and sequential flow chart of dry cleaning, Laundry symbols (European Standards)

UNIT V

Quality in Garment Finishing

Colour matching and shade sorting

RECOMMENDED BOOKS

1. Shenai, V.A., 'Technology of Textile Finishing', Sevak Publications, Mumbai, 1995.
2. Hall, A.J., 'Textile Finishing', Elsevier Publishing Co. Ltd, 1986.
3. Schiendler, W.D., and Hauser, P.J., 'Chemical Finishing of Textiles', The Textile Institute, WoodHead, 2004.
4. Scott, R.A., 'Textiles for Protection', The Textile Institute, Woodhead, 2005.
5. Goldman, R.F. and Lyle, D.S., 'Performance of Textiles', John Wiley and Sons, New York, 1987.

SUGGESTED WEBSITES

1. https://textilelearner.net/garment-finishing-process/
2. http://textilemerchandising.com/steps-of-garments-finishing-2/
3. https://textilestudycenter.com/garment-finishing-pressing-flow-chart-of-garment-finishing/
4. https://www.onlineclothingstudy.com/2015/10/functions-of-finishing-department-in.html
5. https://garmentsmerchandising.com/process-sequence-of-garments-finishing-section/
6. https://www.slideshare.net/anurag571/garment-finishing-methods
7. https://www.fibre2fashion.com/industry-article/1699/special--finishes-to-garment-an-overview
8. https://www.linkedin.com/pulse/garment-finishing-process-zhuang-kathy

9. https://in.apparelresources.com/business-news/manufacturing/improving-finishing-times-processes-involved/

10. https://www.academia.edu/36336283/fabric_and_garment_finishing_defects_in_finishing

11. http://swayam.gov.in

INSTRUCTIONAL STRATEGY

This is theoretical subject and contains five units of equal weight age.

4.5 OPEN ELECTIVE

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RATIONALE

Open electives are very important and play major role in implementation of National Education Policy. These subjects provide greater autonomy to the students in the curriculum, giving them the opportunity to customize it to reflect their passions and interests. The system of open electives also encourages cross learning, as students pick and choose subjects from the different streams.

COURSE OUTCOMES

At the end of the open elective, the students will be able to:

CO1: State the basic concepts and principles about the subject of interest.
CO2: Perform in a better way in the professional world.
CO3: Select and learn the subject related to own interest.
CO4: Explore latest developments in the field of interest.
CO5: Develop the habit of self-learning through online courses.

LIST OF OPEN ELECTIVES (The list is indicative and not exhaustive)

1. Computer Application in Business
2. Introduction to NGO Management
3. Basics of Event Management
4. Event Planning
5. Administrative Law
6. Introduction to Advertising
7. Moodle Learning Management System
8. Linux Operating System
9. E-Commerce Technologies
10. NCC
11. Marketing and Sales
12. Graphics and Animations
13. Digital Marketing
14. Human Resource Management
15. Supply Chain Management

16. TQM

GUIDELINES

Open Elective shall be offered preferably in online mode. Online mode open elective shall preferably be through Massive Open Online Courses (MOOCs) from Swayam, NPTEL, Upgrad, Udemy, Khan Academy or any other online portal to promote self-learning. A flexible basket of large number of open electives is suggested which can be modified depending upon the availability of courses at suggested portals and requirements. For online open electives, department coordinators shall be assigned to monitor and guide the group of students for selection of minimum 20 hours duration online course of their choice. For offline open electives, a suitable relevant subject shall be offered by the respective department to the students with minimum 40% of the total class strength as per present and future requirements.

Assessment of MOOCs open elective shall be based on continuous evaluation by the respective coordinator. The coordinator shall consider the submitted assignments by the students from time to time during the conduct of MOOCs. The MOOCs assessment shall be conducted by the coordinator along with one external expert by considering submitted assignments out of 100 marks.

In case, no suitable open elective is available online, only then the course may be conducted in offline mode. The assessment of offline open elective shall be internal and external. The offline open elective internal assessment of 40 marks shall be based on internal sessional tests; assignments etc. and external assessment of 60 marks shall be based on external examination at institute level.

NOTE

The students enrolled under NCC will compulsorily undertake NCC as an open elective subject.

SUGGESTED WEBSITES

1. https://swayam.gov.in/
2. https://www.udemy.com/
3. https://www.upgrad.com/
4. https://www.khanacademy.org/

4.6 MINOR PROJECT

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RATIONALE

Minor project work will help in developing the relevant skills among the students as per National Skill Qualification Framework. It aims at exposing the students to the present and future needs of various relevant industries. It is expected from the students to get acquainted with desired attributes for industrial environment. For this purpose, students are required to be involved in Minor Project Work in different establishments.

COURSE OUTCOMES

After undergoing this course, the students will be able to:

CO1: Define the problem statement of the minor project according to the need of industry.
CO2: Work as a team member for successful completion of minor project.
CO3: Write the minor project report effectively.
CO4: Present the minor project report using PPT.

GUIDELINES

Depending upon the interest of the students, they can develop minor projects as per present and future demand of the industry. The supervisors may guide the students to identify their minor project work and chalk out their plan of action well in advance. As a minor project activity each student is supposed to study the operations at site and prepare a detailed project report of the observations/processes/activities. The supervisor may create a group of 4-5 students as per their interest to work as a team for successful completion of the minor project.

The supervisor shall evaluate the students along with one external expert by considering the following parameters:

	Parameter	**Weightage**
I	Defining problem statement, focus and approach	20%
ii	Innovation / creativity	20%
iii	Report Writing	20%
iv	Power Point Presentation	20%
v	Viva - voce	20%

THIRD YEAR

NSQF LEVEL - 5

12. STUDY AND EVALUATION SCHEME

FIFTH SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits L+P= C	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr	Total	
5.1	Industrial Training - II	-	2	0+1 =1	-	40	40	-	60	60	100
5.2	Fashion Buying and Merchandising	-	10	0+5=5	-	40	40	-	60	60	100
5.3	Inside Garment Industry	4	-	4+0 =4	40	-	40	60	-	60	100
5.4	Programme Elective-I	2	2	2+1=3	40	40	80	60	60	120	200
5.5	Fabric Sourcing and Costing	-	10	0+5=5	-	40	40	-	60	60	100
5.6	Multidisciplinary Elective (MOOCs^{+}/Offline)	2	-	2+0=2	40	-	40	60	-	60	100
	# SCA	-	3	-	-	-	-	-	-	-	-
	Total	**08**	**27**	**20**	**120**	**160**	**280**	**180**	**240**	**420**	**700**

\+ Assessment of Multidisciplinary Elective through MOOCs shall be based on assignments out of 100 marks.

Programme Elective I: 5.4.1 Denim Technology 5.4.2 Accessory Technology 5.4.3 Apparel Compliance

\# Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India, Electoral Literacy, Motor Vehicles (Driving) Regulations 2017 etc., games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self-study etc.

SIXTH SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week		Credits (C) L + P = C	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	P		Th	Pr	Total	Th	Pr		
6.1	Garment Audit	-	6	0+3=3	-	40	40	-	60	60	100
6.2	*Entrepreneurship Development & Management	3	-	3+0=3	40	-	40	60	-	60	100
6.3	Advance CAD in Fashion Technology	-	6	0+3=3	-	40	40	-	60	60	100
6.4	Programme Elective - II	2	2	2+1=3	40	40	80	60	60	120	200
6.5	Major Project/Industrial Training	-	16	0+8=8	-	40	40	-	60	60	100
# Student Centered Activities (SCA)		-	-	-	-	-	-	-	-	-	-
Total		**5**	**30**	**20**	**80**	**160**	**240**	**120**	**240**	**360**	**600**

* Common with other Diploma Courses.

Programme Elective II: 6.4.1 Visual Merchandising 6.4.2 Boutique Management 6.4.3 Retail Management

Student Centered Activities will comprise of co-curricular activities like extension lectures on Constitution of India, Electoral Literacy, Motor Vehicles (Driving) Regulations 2017 etc., games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities and self-study etc.

19. HORIZONTAL AND VERTICAL SUBJECTS ORGANISATION

Sr. No.	Subjects/Areas	Hours Per Week	
		Fifth Semester	Sixth Semester
1.	Industrial Training - II	2	-
2.	Fashion Buying and Merchandising	10	-
3.	Inside Garment Industry	4	-
4.	Programme Elective-I	4	-
5.	Fabric Sourcing and Costing	10	-
6.	Multidisciplinary Elective (MOOCs^{+}/Offline)	2	
7.	Garment Audit	-	6
8.	Entrepreneurship Development & Management	-	3
9.	Advance CAD in Fashion Technology	-	6
10.	Programme Elective - II	-	4
11.	Major Project/Industrial Training	-	16
12.	Student Centered Activities	3	-
	Total	**35**	**35**

20. COMPETENCY PROFILE & EMPLOYMENT OPPORTUNITIES

Government and private sectors related to **Fashion Technology** require **supervisors** having well developed skills with clear choice of procedures. They are expected to have complete knowledge and practical skills related to fashion technology field. They shall be able to communicate clearly with others. Diploma holders after passing level 5 shall have understanding of desired mathematical skills and understanding of social and natural environment. They are expected to collect, organize and communicate information effectively.

Work requiring knowledge, skills and aptitudes at level 5 will also be carried out in familiar situations, but also ones where problems may arise. Job holders will be able to make choices about the best procedures to adopt to address problems where the choices are clear. Individuals in jobs which require level 5 qualifications will normally be responsible for the completion of their own work and expected to learn and improve their performance on the job. They will require well developed practical and cognitive skills to complete their work. They may also have some responsibility for others' work and learning.

Fashion Technology diploma pass out students will be expected to understand what constitutes quality in the occupation and will distinguish between good and bad quality in the context of their work. They will be expected to operate hygienically and in ways which show an understanding of environmental issues. They will take account of health and safety issues as they affect the work they carry out or supervise. They are expected to have good practical knowledge of fashion buying, merchandising, fashion sourcing, costing along with garment auditing for working efficiently in fashion technology industries. They are also expected to have clear theoretical concepts of inside garment industry.

Fashion technology diploma students are expected to work for a wide variety of employers as fashion technologists. They have wide scope to work as supervisor in export houses, import houses, domestic industries, freelancer in different activities related to fashion designing, fashion merchandising in marketing, production and quality control units in garment manufacturing industries. They can start their own small startup in the area of marketing, sales, manufacturing and production etc.

21. PROGRAMME OUTCOMES

The programme outcomes are derived from five domains of NSQF Level – 5 namely Process, Professional Knowledge, Professional Skill, Core Skill, Responsibility. After completing this level, the student will be able to:

PO1: Perform task that require well developed skills with clear choice of procedures.

PO2: Acquire knowledge of facts, principles and processes related to fashion technology.

PO3: Demonstrate cognitive and practical skills to complete tasks and solve problems.

PO4: Develop skills to collect, organize and communicate information.

PO5: Accomplish own work and supervise others work.

PO6: Select online multidisciplinary electives of own interest to promote self-learning.

22. ASSESSMENT OF PROGRAMME AND COURSE OUTCOMES

Programme Outcomes to be assessed	Assessment criteria for the Course Outcomes
PO1: Perform task that require well developed skills with clear choice of procedures.	• Conceptualize the fundamentals of fashion. • Comprehend detail concepts of fashion buying • Visualize the works of a merchandiser • Handle various segments of fashion merchandise. • Select various popular players in fashion market. • Select the raw materials for garment manufacturing. • Visualize the mechanical and chemical finishing in denim. • Identify various varieties of denim. • Select various popular players in denim. • Visualize the various finishes available for accessory production • Identify various production steps of accessories • Select various popular players in accessories. • Identify the need of safety compliance in apparel • Handle the course of compliance and audit • Identify various commercial fabrics used in garment production. • Select various fabric qualities required as per need. • Perform value addition in fabric structures. • Handle various trimmings and accessories sourced in garment production. • Calculate and compare costs of various sourced raw material. • Inspect physically the ready shipment. • Prepare Audit related documents. • Measure garments to compare with buyer's specification. • Conduct color matching and shade sorting. • Decide passing or rejecting the audit. • Draw fashion figures using software.

	• Design and imply effects in garment designs. • Prepare digital mood or story board. • Handle various professional tools for digitally drafting patterns. • Utilize software for overall designing • Prepare merchandise displays for a particular store. • Visualize the need of branding and identity of merchandise. • Handle various trends in visual merchandising • Prepare boutique for customer segment. • Perform promotion strategies for running a boutique. • Develop a business model for a boutique • Prepare visual merchandising plan. • Perform promotion strategies for running a retail outlet. • Develop a business model for a retail store.
PO2: Acquire knowledge of facts, principles and processes related to fashion technology.	• Visualize a garment export house • Familiarize with garment export formats • Select the raw materials for garment manufacturing. • Learn various garment operations. • Explore the challenges faced by garment industry. • Study the fundamentals of denim. • Comprehend detail concepts of denim sewing • Conceptualize the idea of accessories. • Comprehend detail raw material of accessory design • Understand the need and importance of compliance • Study the social and environmental compliance in garment industry • Learn the requirement of Management Systems Audit in garment industry • Understand the concept of Visual Aspect of selling merchandise.

	• Comprehend design and planning of a fashion store. • Understand the concept of boutique management. • Comprehend the need of inventory in a boutique. • Understand the concept of retailing. • Learn various operations in retail management.
PO3: Demonstrate cognitive and practical skills to complete tasks and solve problems.	• Conceptualize the fundamentals of fashion. • Comprehend detail concepts of fashion buying • Visualize the works of a merchandiser • Handle various segments of fashion merchandise. • Select various popular players in fashion market. • Select the raw materials for garment manufacturing. • Visualize the mechanical and chemical finishing in denim. • Identify various varieties of denim. • Select various popular players in denim. • Visualize the various finishes available for accessory production • Identify various production steps of accessories • Select various popular players in accessories. • Identify the need of safety compliance in apparel • Handle the course of compliance and audit • Identify various commercial fabrics used in garment production. • Select various fabric qualities required as per need. • Perform value addition in fabric structures. • Handle various trimmings and accessories sourced in garment production. • Calculate and compare costs of various sourced raw material. • Inspect physically the ready shipment. • Prepare Audit related documents. • Measure garments to compare with buyer's specification.

	• Conduct color matching and shade sorting. • Decide passing or rejecting the audit. • Draw fashion figures using software. • Design and imply effects in garment designs. • Prepare digital mood or story board. • Handle various professional tools for digitally drafting patterns. • Utilize software for overall designing • Prepare merchandise displays for a particular store. • Visualize the need of branding and identity of merchandise. • Handle various trends in visual merchandising • Prepare boutique for customer segment. • Perform promotion strategies for running a boutique. • Develop a business model for a boutique • Prepare visual merchandising plan. • Perform promotion strategies for running a retail outlet. • Develop a business model for a retail store.
PO4: Develop skills to collect, organize and communicate information.	• Understand the working environment of industries • Learn about present and future requirement of industries. • Develop writing, speaking and presentations skills. • Observe technological developments as per present and future needs of industries. • Collect, communicate and manage the data from connected devices. • Comprehend the importance of entrepreneurship and its role in nation's development. • Classify the various types of business and business organizations. • Identify the various resources / sources and / or schemes for starting a new venture. • Explain the principles of management including its

	functions in an organisation. • Conduct market survey and prepare project report. • Define the problem statement of the Major project / Industrial training according to the need of industry. • Write the Major project / Industrial training report effectively. • Present the Major project / Industrial training report using PPT.
PO5: Accomplish own work and supervise others work.	• Take necessary safety precautions and measures. • Work in team for solving industrial problems • Develop competencies and skills required by relevant industries. • Define the problem statement of the Major project / Industrial training according to the need of industry. • Work as a team member for successful completion of Major project / Industrial training. • Write the Major project / Industrial training report effectively. • Present the Major project / Industrial training report using PPT.
PO6: Select online multidisciplinary electives of own interest to promote self-learning.	• Apply critical thinking in problem solving. • Demonstrate self and time management. • Display analytical and research abilities. • Integrate multiple knowledge domains. • Enhance the scope and depth of learning.

23. SUBJECTS & CONTENTS

(THIRD YEAR)

FIFTH SEMESTER

5.1 INDUSTRIAL TRAINING-II

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RATIONALE

Industrial training will help the students to understand the working environment of relevant industries. The student will learn to work in team to solve the industrial problems. It will also give exposure about the present and future requirements of the relevant industries. This training is very important for development of required competencies and skills for employment and start– ups.

COURSE OUTCOMES

After undergoing the training, the students will be able to:

CO1: Understand the working environment of industries

CO2: Take necessary safety precautions and measures.

CO3: Learn about present and future requirement of industries.

CO4: Work in team for solving industrial problems

CO5: Develop competencies and skills required by relevant industries.

CO6: Develop writing, speaking and presentations skills.

PRACTICAL EXERCISES

1. Report writing based on industrial training.
2. Preparation of Power Point Slides based on industrial training and presentation by the candidate.
3. Internal Evaluation based on quality of Report, PPT preparation, PPT presentation and answer to queries.
4. External Evaluation based on quality of Report, PPT preparation, PPT presentation and answer to queries.

GUIDELINES

Students will be evaluated based on Industrial training report and their presentation using Power Point about the knowledge and skills gained during the training. The Head of the Department will depute faculty coordinators by assigning a group of students to each. The coordinators will mentor and guide the students in preparing the PPTs for final presentation. The following performance parameters are to be considered for assessment of the students out of 100 marks:

	Parameter	**Weightage**
i	Industrial assessment of the candidate by the trainer	40%
ii	Report Writing	20%
iii	Power Point Presentation	20%
iv	Viva-voce	20%

5.2 FASHION BUYING AND MERCHANDISING

L	P
-	10

RATIONALE

In order to gain a thorough understanding of market trends, product development, retail management, financial acumen, brand management, supply chain dynamics, globalization, cultural awareness, technology integration, and entrepreneurship opportunities, fashion merchandising and buying is very crucial subject in the fashion industry.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Conceptualize the fundamentals of fashion.
CO2: Comprehend detail concepts of fashion buying
CO3: Visualize the works of a merchandiser
CO4: Handle various segments of fashion merchandise.
CO5: Select various popular players in fashion market.

PRACTICAL EXERCISES

UNIT I

Fashion Fundamentals

Fashion categorization - Duration (Fad: classic), Acceptance (Hi-Fashion: Mass Fashion) and Custom made or Multiple size ranges (Couture: Pret-a-porter). Fashion Dimensions – Style, fashion theories with practical examples, fashion principles and fashion cycle. Fashion Direction – Trend, Avant-Garde, Fashion Forecasting Fashion Professionals- Designer, Stylist, Vendor, Buyer, Merchandiser, Retailer, Converter. Fashion Support– Merchandise, Accessories, Apparel, Boutique, Atelier, Bespoke, Collection, Haute couture. Factors influencing fashion.

UNIT II

Fashion Buying

Present Indian exports and India’s position in the world apparel/textile Market. Apparel Clusters classification of India. Steps in Fashion Buying, Organization structure of a Buying House, Buying Plan. Role of buying team.

UNIT III

Fashion Merchandising

Skills of a merchandiser. Responsibilities of a merchandiser. Levels of Merchandising. Steps of Merchandising. Sampling approval process, Feasibility of product.

UNIT IV

Fashion Segmentation

Home Fashion Products, Apparel Fashion Products, Accessories and life style products

UNIT V

Fashion Business

Indian Brands, International Brands, Fashion Sources, Fashion Shows, Exhibition and Trade Shows, Indian Fashion Organizations and Associations, International Fashion Organization and Associations.

RECOMMENDED BOOKS

1. Fashion Buying From Trend Forecasting to Shop Floor, by David Shaw, Dimitri Koumbis, Bloomsbury Publishing, 2020
2. Fashion Buying and Merchandising, by Rosy Boardman, Rachel Parker-Strak, Claudia E. Henninger, Taylor & Francis, 2020
3. Fashion Marketing, Third Edition by Mike Easey, Blackwell Publishing, 2009

RECOMMENDED WEBSITES

1. www.fashionretailacademy.ac.uk/resources/guide-to-fashion-buying
2. https://egyankosh.ac.in/handle/123456789/14774
3. www.researchgate.net/publication/371193870_Product_development_fashion_buying_and_merchandising

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills among the students. This subject contains five units of equal weightage.

5.3 INSIDE GARMENT INDUSTRY

L	P
4	-

RATIONALE

Inside the Garment Industry provides a critical examination of the various facets of the apparel production industry. This subject will give thorough overview of the procedures, tools, and management concepts that control the manufacture and distribution of apparel. It will help the students in selecting the raw materials and handling the challenges of garment industries.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Visualize a garment export house
CO2: Familiarize with garment export formats
CO3: Select the raw materials for garment manufacturing.
CO4: Learn various garment operations.
CO5: Explore the challenges faced by garment industry.

DETAILED CONTENTS

UNIT I

Garment Export Houses

Flowchart of garment production in an export house. Types of Garment Export Houses. Designations and responsibilities of Higher Level, Middle Level and Lower Level Management in a Garment Export House.

UNIT II

Garment Industry Formats

Design spec. sheet, Purchase Order, BOM, Quality control tickets, Cutting ticket, Labour worksheet, Measurement sheet, Assembly diagram sheet, Packing List, Cost Sheet, Compliance Checklist, Machine Maintenance Log.

UNIT III

Fabric, Trims and Accessory Selection

Fabric selection, Steps of Fabric Sourcing, Fabric ordering and receiving, Trims and notions distribution, Accessories Sourcing Procedure

UNIT IV

Garment Industry Operations

Assembly Operations of a Full Sleeve Men's Shirt, Assembly Operations of a men's trousers, General Problems faced in Garment Operations on Shop floor, Ergonomics and its application in garment industry

UNIT V

Garment Industry Challenges

Low efficiency, High Defect rate, Operator skills, Attrition rate, Cost Effectiveness, Machinery up gradation, Fast fashion cycle.

RECOMMENDED BOOKS

1. Coles M Sew, Heinemann, A complete guide for sewing – Singapore:Professional Publishing Blackwell
2. Reader's digest Sewing guide, Complete Guide to Sewing (13thed.). The Reader's Digest Association Inc, Pleasant Ville.
3. Industrial Machinery by Solinger, Solinger, Oxford University Press, USA
4. Harold Carr and Barbara Latham, (1994). *The Technology of Clothing Manufacture*, Hong Kong:Blackwell Science.
5. Introduction to clothing Technology – Harold Carr and Latham, John Wiley & Sons, New York
6. Managing Quality - PV Mehta & SK Bhardwaj, New Age Publishers, Delhi

RECOMMENDED WEBSITES

1. https://reads.alibaba.com/industry-product-blog-template-product-selection/.
2. https://onlinegarmentsacademy.blogspot.com/2020/08/garmentsmachinery%20.html#google vignette.
3. https://www.slideshare.net/AAshikRahman4/g3097pdf
4. https://www.nsdcindia.org/scmp/assets/image/1887896915-

Industrial_Sewing_Machine_Operator_English.pdf

5. https://textilescommittee.nic.in/sites/default/files/course-content/TC_GMT_11.pdf

INSTRUCTIONAL STRATEGY

This is theoretical subject and contains five units of equal weight-age.

5.4 PROGRAMME ELECTIVE - I
5.4.1 DENIM TECHNOLOGY

L	P
2	2

RATIONALE

The new and evergreen fashion of denim is a dedicated industry within garments. A thorough study of denim fabric to fashion is crucial for students seeking career in Jeanswear. The composite units producing denim fabric, dyeing and garment is itself an open career opportunity for diploma holders. This make the need of this course specifically to the denim enthusiast.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Study the fundamentals of denim.
CO2: Comprehend detail concepts of denim sewing
CO3: Visualize the mechanical and chemical finishing in denim.
CO4: Identify various varieties of denim.
CO5: Select various popular players in denim.

DETAILED CONTENTS

UNIT I
Denim Introduction

Denim - Definition, fibers used, yarns used, weaves used, indigo and non-indigo dyes, flowchart of a denim composite unit.

UNIT II
Denim Sewing

Seams used in construction of jeans, stitch types used in jeans, sewing threads for jeans, sewing needles for jeans, Sewing machines used for jeans, feed system for jeans, Fasteners used in jeans, sewing defects in jeans.

UNIT III

Denim Processing

Dry Processing – Whiskering, Scrapping, Grinding, Crinkle, LASER, Sand Blasting, Tagging

Wet Processing – PP Finish, Soft Wash, Enzyme Wash, Acid Wash, Tinting, Resin Finish, Stone Wash

UNIT IV

Denim Varieties

Pseudo denim, Generic denim, Reverse denim, Stretch denim, Denim blends

UNIT V

Denim Products and Brands

Denim wear examples, popular denim brands worldwide, Non-apparel denim products

PRACTICAL EXERCISES

1. Prepare a recipe for Denim stone wash for a lot of 10 jeanswear mentioning all important ingredients, physical conditions and machine requirements.
2. Prepare a comparative chart for various denim washes showing its main ingredient, technical effect and visual effect.
3. Collect samples of various denim fabrics.
4. Preparing of samples of various denim shade blankets.
5. Collect information of any one denim composite units with a detail profile.

RECOMMENDED BOOKS

0 Denim: Manufacture, Finishing & Applications, Ed. by Roshan Paul, The Textile Institute, Manchester, 2016.
1 Denim Book: From Cotton to Fashion by Clariant.
2 Denim Book by Archroma.
3 Denim Fabric Manufacturing, Cotton Inc, NC, USA.
4 Denim: A Fabric for all Dyeing, Weaving & Finishing by M.S. Parmar, S.S. Satsangi, Dr. Jai Prakash, NITRA, 1996.
5 Denim by Dr. J. J. Shroff, ATIRA, 2015.

RECOMMENDED WEBSITES

1. www.textiles.clariant.com
2. www.advanceddenim.clariant.com
3. http://nptel.iitm.ac.in

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills among the students. This subject contains five units of equal weightage.

5.4.2 ACCESSORY TECHNOLOGY

L	P
2	2

RATIONALE

The value addition by accessory in garments complements the costume. The variety of accessories has become a large market from production, sourcing and utilizing in garments. This subject will help the students to explore effective addition to costume i.e. accessory. It will further help the students to handle the vast world of accessories.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Conceptualize the idea of accessories.
CO2: Comprehend detail raw material of accessory design
CO3: Visualize the various finishes available for accessory production
CO4: Identify various production steps of accessories
CO5: Select various popular players in accessories.

DETAILED CONTENTS

UNIT I

Accessory Introduction

Definition, Classification – Bag, Footwear, Jewellery, Hat, Eyewear, Scarves, Ties, Wristwatches, Belts, Gloves.

UNIT II

Accessory Material

Natural fibers and fabrics, Natural skins, Natural metals and stones, New developments

UNIT III

Accessory finishes

Hand embellishments, Machine embellishments, Contemporary finishing techniques

UNIT IV

Accessory Production

Essential tools, Prototyping, Construction techniques

UNIT V

Accessory Business

Current scenario, Popular brands of world – Bags, Footwear and Jewellery

PRACTICAL EXERCISES

1. Prepare a sheet of Jewellery design.
2. Prepare a sheet of bag designs.
3. Prepare a sheet of footwear designs.
4. Prepare a sheet stolls and scarves design.
5. Prepare a sheet showing accessories selection according to figure types

RECOMMENDED BOOKS

1. A Comprehensive Guide for Advanced Leather Goods Designing by DurairajDhanapal
2. Leather in Fashion Designing by Anita Tyagi
3. Handmade leather bags and accessories by Elean Ho

RECOMMENDED WEBSITES

1. https://www.styleliquid.com/2020/03/garment-accessories-and-enhancements
2. https://ebooks.inflibnet.ac.in/hsp07/chapter/fashion-accessories-i/
3. https://textilelearner.net/list-of-garment-accessories/
4. https://www.kolsquare.com/en/blog/top-10-luxury-fashion-accessories-brands-most-mentioned-by-influencers

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills among the students. This subject contains five units of equal weightage.

5.4.3 APPAREL COMPLIANCE

L	P
2	2

RATIONALE

Apparel Compliance will help the students in acquiring the necessary information and abilities to guarantee that industry is legal and following ethical standards. This subject will give exposure about labor laws, environmental regulations, and social responsibility frameworks. This subjectwill develop skills to evaluate, oversee, and successfully use compliance procedures, encouraging ethical behavior and reducing the risks connected with non-compliance.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Understand the need and importance of compliance

CO2: Study the social and environmental compliance in garment industry

CO3: Learn the requirement of Management Systems Audit in garment industry

CO4:Identify the need of safety compliance in apparel

CO5: Handle the course of compliance and audit

DETAILED CONTENTS

UNIT I

COMPLIANCE OVERVIEW

Definition, Importance and Objectives, Classification - Legal, Social, Environmental, Management System, Quality, Safety, Labor and certification.

UNIT II

SOCIAL AND ENVIRONMENTAL COMPLIANCE

Tabular Study of any five social and environmental standards popular in the European market and US market. Oekotex.

UNIT III

MANAGEMENT SYSTEM AND QUALITY COMPLIANCE

Tabular study of any five management system and quality compliance standards used in India. OCS (Organic Content Standard).

UNIT IV

SAFETY COMPLIANCE

Features of safety compliance. WRAP (Worldwide Responsible Accredited Production) , SMETA (Sedex Members Ethical Trade Audit)

UNIT V

COMPLIANCE PHASES

Pre-Audit, On-site Audit, Post-Audit, New Certifications in Apparel with their benefits

PRACTICAL EXERCISES

1. Prepare a compliance sheet for fashion technology department in the institute checking environmental compliance.
2. Prepare a compliance sheet for fashion technology departmentin the institute checking safety compliance.
3. Prepare a compliance sheet for fashion technology departmentin the institute focusing the management system of the regular work.
4. Prepare a compliance sheet for Internal Quality Assurance for your department.

RECOMMENDED BOOKS

1. Das.S, Li & Fung, “Product safety and restricted substances in apparel’, Woodhead Publishing
2. Christie. R, “Environmental aspects of textile dyeing”, Heriot-Watt University, UK Woodhead Publishing Series in Textiles No. 66.
3. SA 8000 – NITRA Tablet.
4. Rajesh Chhabara, “Social Accountability”, Ava Softech Pvt. Ltd., 2005.

RECOMMENDED WEBSITES

1. http://www.labour.nic.in.
2. http://www.unicef.org.
3. http://www.indianchild.com.

4. http://www.paycheck.in.
5. http://www.sa-intl.org.

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills among the students. This subject contains five units of equal weightage.

5.5 FABRIC SOURCING AND COSTING

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RATIONALE

Fashion sourcing and costing is essential to successfully negotiate the intricacies of the fashion industry. Students who grasp cost analysis and sourcing techniques are more equipped to make decisions that maximize sustainability and profitability. This subject help the students to succeed in supplier negotiations, supply chain management, and ethical issues, preparing them for success in the cutthroat world of fashion.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Identify various commercial fabrics used in garment production.
CO2: Select various fabric qualities required as per need.
CO3: Perform value addition in fabric structures.
CO4: Handle various trimmings and accessories sourced in garment production.
CO5: Calculate and compare costs of various sourced raw material.

PRACTICAL EXERCISES

1. Comparison of different types of commercial woven fabrics and their sample collection - Cotton, Silk, Wool, Nylon, polyester, Felt, Long cloth, Poplin, Netted fabric, Lawn, chintz, Organdie, Mull, denim, Raw silk, Pure silk, Jeans, khaki, canvas, casement, Corduroy.

2. Comparison of commercial knit fabrics and their sample collection - single jersey, rib, pique, waffle, interlock, terry, fleece.

3. Identification of basic weaves - Plain (Long cloth, Poplin, Rubbia,Casement, Cambric, Voile, Mulmul, Buckram), Twill (Drill, Denim, Jean, Tweed, Serge, Gaberdine).Figured-Tapestry, Brocade, Damask.

4. Select Quality and Construction of fabric structure based on EPI, PPI, Count & ply of wrap and weft yarn -Coarse, Medium, Fine, Superfine.

5. Differentiation of fabric structure based on GSM - Light, Medium, Heavy.
6. Level identification of ornamentation - Dyed, Striped, Check, and Printed.
7. End use of fabric structure - Shirting, Suiting, Lining, Dress Material, Bed cover, Table cover, Curtain, Furnishing, Upholstery.
8. Analysis of Width of Fabric –Woven (Single Width, Medium Width, Double Width). Knits (Open Width and Tubular fabrics).
9. Classification of Trimmings-Decorative and Functional Trimmings.
10. Comparative cost analysis of various fabric, trims and accessories.

RECOMMENDED BOOKS

1. Sourcing and Selecting Textiles for Fashion by Erin Cadigan
2. Global Sourcing in the Textile and apparel Industry by Jung E.Ha Brookshire
3. Basics Textile Design 01: Sourcing Ideas: Researching Colour, Surface, Structure, Texture, and Pattern by Josephine Steed, Frances Stevenson
4. Krishna kumar M., (2015). Apparel costing, A functional Approach, Chandigarh Abishek
5. Publications, Print. Dickerson, K.G. (2003). Inside the Fashion Business, (7th ed.), South Asia: Dorling Kindersley Pvt. Ltd.
6. Raj kishore Nayak & Rajiv Padhye, (2015). Garment Manufacturing Technology, Wood Head Publishing.

RECOMMENDED WEBSITES

1. www.masterclass.com/articles/28-types-of-fabrics-and-their-uses
2. www.textileapex.com/
3. www.textilelearner.net/different-types-of-trims-used-in-garments/
4. www.sewguide.com/fabric-trims/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and contains five units of equal weight-age.

5.6 MULTIDISCIPLINARY ELECTIVE

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RATIONALE

Multidisciplinary electives are very important and play major role in implementation of National Education Policy. Multidisciplinary is a subject which is useful for two or more disciplines in which students are asked to understand the concept of multidisciplinary or interdisciplinary. It will help the students to gain an arsenal of skills that are easily transferable across work environments.

COURSE OUTCOMES

At the end of the open elective, the students will be able to:

CO1: Apply critical thinking problem solving.
CO2: Demonstrate self and time management.
CO3: Display analytical and research abilities.
CO4: Integrate multiple knowledge domains.
CO5: Enhance the scope and depth of learning.

LIST OF MULTIDISCIPLINARY ELECTIVES

(The list is indicative and not exhaustive)

1. Introduction to Internet of Things
2. Introduction to Robotics
3. Introduction to Embedded System Design
4. Fundamentals of Artificial Intelligence
5. Digital Image Processing
6. Introduction to Machine Learning
7. Fundamentals of Artificial Intelligence
8. The Joy of Computing Using Python
9. Cloud Computing
10. Introduction to Industry 4.0
11. Industrial Internet of Things
12. Object Oriented System Development using UML, Java and Patterns

GUIDELINES

Multidisciplinary Elective shall be offered preferably in online mode. Online mode multidisciplinary elective shall preferably be through Massive Open Online Courses (MOOCs) from Swayam, NPTEL, Upgrad, Udemy, KhanAcademy or any other online portal to promote self-learning. A flexible basket of large number of multidisciplinary electives is suggested which can be modified depending upon the availability of courses at suggested portals and requirements. For online multidisciplinary electives, department coordinators shall be assigned to monitor and guide the group of students for selection of minimum 20 hours duration online course of their choice. For offline multidisciplinary electives, a suitable relevant subject shall be offered by the respective department to the students with minimum 40% of the total class strength as per present and future requirements.

Assessment of MOOCs multidisciplinary elective shall be based on continuous evaluation by the respective coordinator. The coordinator shall consider the submitted assignments by the students from time to time during the conduct of MOOCs. The MOOCs assessment shall be conducted by the coordinator along with one external expert by considering submitted assignments out of 100 marks.

In case, no suitable multidisciplinary elective is available online, only then the course may be conducted in offline mode. The assessment of offline multidisciplinary elective shall be internal and external. The offline multidisciplinary elective internal assessment of 40 marks shall be based on internal sessional tests, assignments etc. and external assessment of 60 marks shall be based on external examination at institute level.

SUGGESTED WEBSITES

1. https://swayam.gov.in/
2. https://www.udemy.com/
3. https://www.upgrad.com/
4. https://www.khanacademy.org/

SIXTH SEMESTER

6.1 GARMENT AUDIT

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RATIONALE

It is important to familiarize students with physical audit carried out by third party under directions of buyer before shipping the order. It is crucial stage after finishing the garment production and could lead to decision of passing or failing of shipment. The subject will enhance the real world skills employed by testing professionals for final audit.

COURSE OUTCOMES

After undergoing the course, the students will be able to:
CO1:Inspect physically the ready shipment.
CO2: Prepare Audit related documents.
CO3: Measure garments to compare with buyer's specification.
CO4: Conduct color matching and shade sorting.
CO5: Decide passing or rejecting the audit.

PRACTICAL EXERCISES

1. Inspection of garment physically and recording visual defects.
2. Measuring a garment physically and record pattern defects as per the measurement sheet.
3. Prepare daily inspection report.
4. Perform an audit of a sample size as per 1.5 and 2.5AQL and prepare audit report.
5. Perform color matching of a Dyed sample with buyer approved sample.
6. Perform shade sorting of a given sample lot and prepare shade family report.
7. Inspect print as per design specification sheet and prepare report.
8. Inspect Embroidery as per design specification sheet and prepare report.
9. Inspect Trims and notions as per trim card.
10. Inspect value addition finishes in a garment and perform report as per buyer's specification.
11. Analyze quality reports of a sample size and calculate defect report.
12. Analyze quality reports of a sample size and calculate cost of quality.

RECOMMENDED BOOKS

1. "Mehta, P.V. (2013). Quality Management in Garment Industry.
2. Nayak, R. &Padhye, R. (2015). Garment Manufacturing Technology.
3. Brahams, S.B. (2012). Quality Assurance for Textiles and Apparel.
4. Mehta, P.V. (2011). Total Quality Management in the Apparel Industry.
5. Fan, J., Hunter, L., & Yu, W. (2004). Clothing Appearance and Fit: Science and Technology.
6. Cooklin, G. (2009). Garment Technology for Fashion Designers.
7. Bubonia, J.E. &Salusso, C.J. (1999). Apparel Quality: A Guide to Evaluating Sewn Products.
8. Mitra, A. (2008). Fundamentals of Quality Control and Improvement.
9. Johnson-Ross, D. (2007). Statistical Quality Control for the Apparel Industry.
10. Azam, M.S. (2016). Garment Manufacturing Technology."

RECOMMENDED WEBSITES

1. https://www.textileinstitute.org/
2. https://www.qualitydigest.com/
3. https://www.intertek.com/
4. https://group.bureauveritas.com/
5. https://www.sgs.com/
6. https://asq.org/
7. https://www.iso.org/home.html
8. https://www.astm.org/

INSTRUCTIONAL STRATEGY

Some of the topics may be taught using question/answer, assignment or seminar method. The teacher will discuss stories and case studies with students, which in turn will develop appropriate managerial and entrepreneurial qualities in the students. In addition, expert lecturers may also be arranged from outside experts. In addition, different activities group discussions, mock interviews, resume presentation, role play, extension lecturers by outside experts, may also be organized. This subject contains five units of equal weightage.

6.2 ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

L	P
3	-

RATIONALE

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. This subject focuses on imparting the necessary competencies and skills of enterprise set up and its management.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Comprehend the importance of entrepreneurship and its role in nation's development.
CO2: Classify the various types of business and business organizations.
CO3: Identify the various resources / sources and / or schemes for starting a new venture.
CO4: Explain the principles of management including its functions in an organisation.
CO5: Conduct market survey and prepare project report.

DETAILED CONTENTS

UNIT I

Entrepreneurship: Concept and definitions, classification and types of entrepreneurs, entrepreneurial competencies, Traits / Qualities of entrepreneurs, manager v/s entrepreneur, role of Entrepreneur, barriers in entrepreneurship, Sole proprietorship and partnership forms of business organisations, small business vs startup, critical components for establishing a start-up, Leadership: Definition and Need, Manager Vs leader, Types of leadership

UNIT II

Definition of MSME (micro, small and medium enterprises), significant provisions of MSME Act, importance of feasibility studies, technical, marketing and finance related problems faced by new enterprises, major labor issues in MSMEs and its related laws, Obtaining financial assistance through various government schemes like Prime Minister Employment Generation Program (PMEGP) Pradhan Mantri Mudra Yogna (PMMY) , Make in India, Start up India, Stand up India , National Urban Livelihood Mission (NULM); Schemes of assistance by

entrepreneurial support agencies at National, State, District level: NSIC, NRDC, DC:MSME, SIDBI, NABARD, Commercial Banks, SFC's TCO, KVIB, DIC, Technology Business Incubator (TBI) and Science and Technology Entrepreneur Parks (STEP).

UNIT III

NATURE AND FUNCTIONS OF MANAGEMENT: Definition, Nature of Management, Management as a Process, Management as Science and Art, Management Functions, Management and Administration, Managerial Skills, Levels of Management; Leadership.

PLANNING AND DECISION MAKING: Planning and Forecasting - Meaning and definition, Features, Steps in Planning Process, Approaches, Principles, Importance, Advantages and Disadvantages of Planning, Types of Plans, Types of Planning, Management by Objective. Decision Making-Meaning, Characteristics.

UNIT IV

ORGANISING AND ORGANISATION STRUCTURE: Organizing Process - Meaning and Definition, Characteristics Process, Need and Importance, Principles, Span of Management, Organisational Chart - Types, Contents, Uses, Limitations, Factors Affecting Organisational Chart.

STAFFING: Meaning, Nature, Importance, Staffing process. Manpower Planning, Recruitment, Selection, Orientation and Placement, Training, Remuneration.

CONTROLLING AND CO-ORDINATION Controlling - Meaning, Features, Importance, Control Process, Characteristics of an effective control system, Types of Control. Co-ordination - characteristics, essentials.

UNIT V

Market Survey and Opportunity Identification, Scanning of business environment, Assessment of demand and supply in potential areas of growth, Project report Preparation, Detailed project report including technical, economic and market feasibility, Common errors in project report preparations, Exercises on preparation of project report.

RECOMMENDED BOOKS

1. BS Rathore and Dr JS Saini, "A Handbook of Entrepreneurship", Aapga Publications, Panchkula (Haryana).
2. Entrepreneurship Development, Tata McGraw Hill Publishing Company Ltd., New Delhi.

3. CB Gupta and P Srinivasan, “Entrepreneurship Development in India”, Sultan Chand and Sons, New Delhi.
4. Poornima M Charantimath, “Entrepreneurship Development - Small Business Enterprises”, Pearson Education, New Delhi.
5. David H Holt, “Entrepreneurship: New Venture Creation”, Prentice Hall of India Pvt. Ltd., New Delhi.
6. PM Bhandari, “Handbook of Small Scale Industry”.
7. L M Prasad, “Principles and Practice of Management”, Sultan Chand & Sons, New Delhi.

SUGGESTED WEBSITES

1. https://ipindia.gov.in/

INSTRUCTIONAL STRATEGY

Some of the topics may be taught using question/answer, assignment or seminar method. The teacher will discuss stories and case studies with students, which in turn will develop appropriate managerial and entrepreneurial qualities in the students. In addition, expert lecturers may also be arranged from outside experts and students may be taken to nearby industrial organizations on visit. Approach extracted reading and handouts may be provided. In addition, different activities like conduct of entrepreneurship awareness camp extension lecturers by outside experts, interactions sessions with entrepreneurs and industrial visits may also be organized. This subject contains five units of equal weightage.

6.3 ADVANCED CAD IN FASHION TECHNOLOGY

L	P
-	6

RATIONALE

With the growing reliance of fashion design on digital technologies, students must become proficient in advanced computer-aided design (CAD) software to create accurate digital prototypes, expedite design processes, and create patterns quickly. Having proficiency with these technologies guarantees accuracy in clothing design and construction, improves employability, and gets students ready for real-world applications.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Draw fashion figures using software.
CO2: Design and imply effects in garment designs.
CO3: Prepare digital mood or story board.
CO4: Handle various professional tools for digitally drafting patterns.
CO5: Utilize software for overall designing.

PRACTCAL EXERCISES

1. Draw profiles of female flesh figures.
2. Design an executive wear along with accessories
3. Design a motif and imply different repeats to prepare a digital pattern.
4. Design a mood/story board according to the selected theme.
5. Design a Logo and Label.
6. Practice Drawing Tools: Line, Arc, Circle, Polygon, Multiline, Solid, Rectangle, Polyline Point.
7. Practice EditingTools: Erase, Copy, Move, Mirror, Stretch, Scale, Fillet, Chamfer Extend, Trim.
8. Hatch Block, Page setup, Printing and Plotting
9. Dimensioning, Linetype, Layer.
10. Using above commands to create bodice block.

RECOMMENDED BOOKS

1. Literature from the supplier of each software can be consulted
   Corel Draw 12 – BPB Publication (latest version)
   Adobe Photoshop 5.5 - BPB Publication (latest version)
2. Smith, J. (2018). Advanced CAD in Garments

RECOMMENDED WEBSITES

1. https://www.coreldraw.com/en/pages/tutorials/
2. https://community.coreldraw.com/
3. https://learn.corel.com/graphic-design-tutorials/coreldraw-tutorials/
4. https://helpx.adobe.com/photoshop/tutorials.html
5. https://photoshopcafe.com/
6. https://phlearn.com/
7. https://makersrow.com/

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and contains five units of equal weightage.

6.4 PROGRAMME ELECTIVE – II

6.4.1 VISUAL MERCHANDISING

L	P
2	2

RATIONALE

In the framework of the fashion industry, this course introduces students to the concepts and procedures of visual merchandising. The deliberate application of visual components to improve the display and advertising of fashion items in retail settings is covered.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Understand the concept of Visual Aspect of selling merchandise.

CO2: Comprehend design and planning of a fashion store.

CO3: Prepare merchandise displays for a particular store.

CO4: Visualize the need of branding and identity of merchandise.

CO5: Handle various trends in visual merchandising

DETAILED CONTENTS

UNIT I

INTRODUCTION

Definition, concept, significance and role of visual merchandiser

UNIT II

STORE ATOMOSPHERIC AND DESIGN

Store Atmospherics- Color, Lighting, Music and Scent. Principles of effective store layout – Free flow, Spine, Circular layouts and spatial planning, Analyzing traffic flow and customer journey optimization. Signage – Safety signage, brand signage, warning signage, prohibited signage, category signage.

UNIT III

DISPLAY DESIGN

Window Design Display, Merchandise Display, Fixtures and Furniture of the store, Props Display.

UNIT IV

BRANDING

Brand Identity, Brand Image and Brand Positioning.

UNIT V

INNOVATION

Integrating digital technology and interactive elements into visual merchandising, Analyzing global trends and emerging innovations in retail design, Discussing sustainability practices and their implications for the future of visual merchandising

PRACTICAL EXERCISES

1. Prepare a list of visual elements for a footwear merchandise shop.
2. Prepare a spatial planning sheet for a T-shirt store targeting youth.
3. Prepare a signage for a goggles and hat shop.
4. Prepare a list of new developments employed by a popular brand for its visual merchandising need.
5. Prepare a comparative sheet of visual merchandising planning of two stores selling same merchandise but different brands.

RECOMMENDED BOOKS

1. Huckerby, P (2015). “Easy Visual Merchandising: An Outstanding Visual Guide For 21st Century Retail”.
2. Bell, J. A., &Ternus, K. (2011). Silent selling: Best practices and effective strategies in visual merchandising (4th ed.). London: Fairchild.
3. "Visual Merchandiser". The Job Guide. Department of Education, Employment and Workplace Relations. Retrieved 5 October 2011.
4. Pradhan, S. (2009). Retailing management: Text and cases. Tata McGraw-Hill Education
5. Schielke, T; Leudesdorff, M (2015). "Impact of lighting design on brand image for fashion retail stores". Lighting Research and Technology. 46 (6): 672–692. doi:10.1177/1477153514541831.
6. Swati Bhalla and Anurag S (2010). Visual merchandising. Tata McGraw Hill.

RECOMMENDED WEBSITES

1. https://ebooks.lpude.in/management/mba/term_4/dmgt552_visual_merchandising.pdf
2. www.ispo.org/store-layout
3. www.slideshare.net/gadekar1986/store-design-12816038
4. en.wikipedia.org/wiki/Visual merchandising
5. www.businessdictionary.com/definition/visual-merchandising.html
6. www.managementstudyguide.com/visual-merchandising.htm

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

6.4.2 BOUTIQUE MANAGEMENT

L	P
2	2

RATIONALE

The goal of the boutique management course is to give fashion technology students a thorough understanding of the values and procedures that go into running a boutique in the ever-changing world of the fashion business. Students will get the skills and information required to manage boutique businesses by studying important topics including inventory control, visual merchandising, marketing tactics and financial administration.

COURSE OUTCOMES

After undergoing this course, the learners will be able to:

CO1: Understand the concept of boutique management.
CO2: Comprehend the need of inventory in a boutique.
CO3: Prepare boutique for customer segment.
CO4: Perform promotion strategies for running a boutique.
CO5: Develop a business model for a boutique

DETAILED CONTENTS

UNIT I

INTRODUCTION

Understanding the concept and significance of boutique in the fashion industry, Exploring different types of boutique formats and their target markets, identifying the role of boutique management in brand positioning and customer experience.

UNIT II

OPERATIONS AND INVENTORY

Overview of boutique operations, including staffing, scheduling, and customer service, Techniques for effective inventory management, including procurement, stocking, and merchandise tracking, Introduction to retail merchandising strategies and product assortment planning for boutique settings

UNIT III

BOUTIQUE DESIGN

Principles of visual merchandising tailored to boutique environments, Designing window displays and in-store layouts to maximize visual impact and sales, Incorporating branding elements and storytelling techniques into boutique visual merchandising.

UNIT IV

MARKETING AND PROMOTION

Developing marketing strategies to promote boutique offerings and attract target customers, Utilizing digital marketing channels and social media platforms for boutique promotion, Implementing promotional events, collaborations, and partnerships to enhance boutique visibility.

UNIT V

BUSINESS DEVELOPMENT

Basics of financial management for boutique operations, including budgeting and financial estimation, Assessing boutique performance through key performance indicators (KPIs) and sales analysis, Exploring strategies for business growth, expansion, and sustainability in the boutique sector.

PRACTICAL EXERCISES

1. Prepare a list of operations fall under boutique management.
2. Prepare a KPI sheet for a boutique nearby you.
3. Prepare a budget sheet to run a boutique in your locality to cater the local needs.
4. Prepare a list of merchandise in demand and supplied by boutique in your locality.
5. Prepare a list of promotion techniques adopted by a boutique management in your locality.

RECOMMENDED BOOKS

1. Briana Stewart, (2014). How to Open a Boutique, The Simple Guide to Boutique Success, New York: Create Independent Publishing Platform.
2. Judith rasband, (2001). Wardrobe Strategies for women, London: Delmar publishers.
3. Mc Jimsey& Harriet, (1973). Art and Fashion in clothing selection, Lowa: State University Press.

4. Debbra Mikaelsen, (2005). FabJob Guide to become a Boutique Owner, Fabjob publisher.
5. Dr. S.S.Khanka, (2013). Entrepreneurial Development, New Delhi: Sultan Chand and Company Pvt. Ltd.
6. Y.K. Bhushan, (2013). Fundamentals of Business Organization and Management, (19th ed.), New Delhi: Sultan Chand and Sons.
7. Rajan Saxena, (2005). Marketing Management, New Delhi: Tata Mc Graw Hill Education.
8. Marting M. Pegler, (2002). Visual Merchandising and Display, New York: Fairchild Publications.

RECOMMENDED WEBSITES

1. https://ebooks.inflibnet.ac.in/hsp07/chapter/boutique-management.
2. https://www.kviconline.gov.in/pmegp/pmegpweb/docs/commonprojectprofile/Boutique.pdf

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age.

6.4.3. RETAIL MANAGEMENT

L	P
2	2

RATIONALE

Retail Management knowledge for fashion students provides a foundation of essential principles and strategies vital for success in the dynamic fashion retail sector. This subject will help to learn retail fundamentals, merchandising, visual presentation, marketing, and analytics.It will further develop practical skills to excel in diverse roles within the industry.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1: Understand the concept of retailing.
CO2: Learn various operations in retail management.
CO3: Prepare visual merchandising plan.
CO4: Perform promotion strategies for running a retail outlet.
CO5: Develop a business model for a retail store.

DETAILED CONTENTS

UNIT I

INTRODUCTION

Retail Industry Overview, Role of Retail Management, Retail Formats

UNIT II

OPERATIONS AND MERCHANDISING

Retail Operations Management, Staffing and Scheduling, Store Layout, Merchandising Strategies, Inventory Management

UNIT III

VISUAL MERCHANDISING

Visual Merchandising Principles, Store Design, Window Displays, Branding in Visual Merchandising

UNIT IV

MARKETING AND PROMOTION

Fashion Retail Marketing, Digital Marketing, Social Media Strategies, Promotional Events.

UNIT V

BUSINESS DEVELOPMENT

Retail Analysis, Sales Data Analysis, Business Growth Strategies.

PRACTICAL EXERCISES

1. Design any retail store layout.
2. Prepare a list of various retail store layouts.
3. Prepare a sheet of window display planning in a retail outlet.
4. Plan a social media strategy for promoting a new fashion merchandise.
5. Prepare a virtual sales data analysis of a garments store.

RECOMMENDED BOOKS

1. Retailing Management, Levy Michael, Weitz Barton, V Edition, Tata McGraw Hill, New York, 2006
2. Retail Management- A Strategic Management Approach, Berman Berry, Evans J.R, IX Edition, Pearson Education, New York, 2006
3. Managing Retailing, Sinha, Uniyal, Oxford University Press, Delhi
4. Retail Management, Nair Suja, V Edition, HPH, Mumbai, 2006
5. Retailing Management-Text and Cases, Pradhan Swapna, II Edition, Tata Mc Graw Hill, India, 2007.
6. Retail Management, Agarwal, Bansal, Yadav, Kumar- PragatiPrakashan, Meerut

RECOMMENDED WEBSITES

1. https://sim.edu.in/wp-content/uploads/2018/02/RETAIL-MANAGEMENT-Notes.pdf
2. https://ebooks.lpude.in/management/mba/term_3/DMGT550_RETAIL_MANAGEMENT.pdf
3. https://www.scribd.com/presentation/38515715/Fashion-Retail-Management

4. https://core.ac.uk/download/pdf/234693863.pdf
5. www.textilelearner.net/fashion-merchandising-and-merchandiser
6. www.luxuryfashionista.com/what-is-fashion-merchandising
7. www.textilefashionstudy.com/fashion-merchandising-principles-roles.
8.

INSTRUCTIONAL STRATEGY

This is hands on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weight age

6.5 MAJOR PROJECT/INDUSTRIAL TRAINING

L	P
-	16

RATIONALE

Major project/Industrial training work will help in developing the relevant skills among the students as per National Skill Qualification Framework. It aims at exposing the students to the present and future needs of various relevant industries. It is expected from the students to get acquainted with desired attributes for industrial environment. For this purpose, students are required to be involved in industrial training / Major Project Work in different establishments.

COURSE OUTCOMES

After undergoing this course, the students will be able to:

CO1: Define the problem statement of the Industrial training/Major project according to the need of industry.

CO2: Work as a team member for successful completion of Industrial training / Major project.

CO3: Write the Internship / Major project report effectively.

CO4: Present the Internship / Major project report using PPT.

GUIDELINES

Depending upon the interest of the students, they can go for Industrial training / Major project as per present and future demand of the industry. The supervisors may guide the students to identify their project work and chalk out their plan of action well in advance. As an Industrial training / Major project activity each student is supposed to study the operations at site and prepare a detailed project report of the observations/processes/activities. The supervisor may create a group of 4-5 students as per their interest to work as a team for successful completion of the Industrial training / Major Project.

The supervisor shall evaluate the students along with one external industry / academic expert by considering the following parameters:

	Parameter	**Weightage**
I	Defining problem statement, focus and approach	20%
ii	Innovation / creativity	20%
iii	Report Writing	20%
iv	Power Point Presentation	20%
v	Viva - voce	20%

24. ASSESMENT TOOLS AND CRITERION

The assessment is carried out by conducting:

1. Formative assessments
2. Summative assessments

1. FORMATIVE ASSESSEMENT

The formative assessment will be evaluated on the basis of the internal assessments for theory subjects and practical by the concerned teachers for evaluating the knowledge and skill acquired by students and the behavioral transformation of the students. This internal assessment is primarily carried out by collecting evidence of competence gained by the students by evaluating them at work based on assessment criteria, asking questions and initiating formative discussions to assess understanding and by evaluating records and reports, and sessional marks are awarded to them.

2. SUMMATIVE ASSESSMENT

The summative assessment will include end semester examination for theory part for each candidate and practical examination with viva voice. Each Performance Criteria will be assigned marks proportional to its importance and proportion of marks for Theory and Skills Practical for each subject should be laid down. The following assessment tools are used for effective student evaluation:

1. Theory
2. Practical
3. Minor & Major Project
4. Massive Open Online Courses (MOOCs)
5. Viva Voce
6. Industrial / In House Training
7. Professional Industrial Training

1. Theory Assessment

Evaluation in theory aims at assessing students' understanding of concepts, principles and procedures related to a course/subject, and their ability to apply learnt principles and solve

problems.

The formative evaluation for theory subjects may be caused through

i. Sessional /class-tests,
ii. Quizzes,
iii. Assignments,
iv. Seminars / Presentations
v. Attendance
vi. Case Studies

For Summative evaluation of theory, the question paper may comprise of three sections.

i. It should contain objective type question and multiple choice questions. The objective type items should be used to evaluate students' performance in knowledge, comprehension and at the most application domains only.

ii. It should contain short answer questions.

iii. Descriptive type questions, with some internal choice of the questions set may be given in this section

2. Practical Assessment

Evaluation of students performance in practical work (Laboratory experiments, Workshop practical /field exercises) aims at assessing students ability to apply or practice the concepts, principles and procedures, manipulative skills, ability to observe and record, ability to interpret and draw conclusions and work related attitudes. This will comprise of a creation of mock environment, wherever applicable in the skill lab which is equipped with all required equipment for development of desired skills. Candidate's soft skills, communication, aptitude, safety consciousness, quality consciousness etc. will be ascertained by observation and will be marked in observation checklist along with the assessment of Job carried out in labs and maintenance of Lab Record Files.

Formative and summative evaluation may comprise of weight ages to performance on task, quality of product, general behavior and it should be followed by viva-voce of the

relevant subject. The end product will be measured against the specified dimensions and standards to gauge the level of skill achievements

3. Minor and Major Project Assessment

The purpose of evaluation of project work is to assess student's ability to apply, in an integrated manner, knowledge and skills in solving real life problems, manipulative skills, ability to observe, record, creativity and communication skills. The project work assigned should be of relevance to the core skill, state of the art topics and the project areas that are pertaining to enhance job skill and enhance occupational opportunities. For both, minor and major project, Formative and summative evaluation may comprise of weight ages to performance on task, quality of product, nature and relevance of project and general behavior.

The formative assessment should include the continuous assessment based on the work allocated and mid semester viva voice or presentation. The final assessment will be the combination of the project undertaken, report submission and should be followed by viva-voce of the relevant subject.

In case of the assessment of this component, the team of examiners should be constituted and half of the examiners in the team should be invited from outside of the institute as expert for conducting the examination.

4. Massive Open Online Courses (MOOCs) Assessment

Open Elective and Multi-Disciplinary Elective may be covered through Massive Open Online Courses (MOOCs) to promote self learning. These platforms promise open, online courses to massive numbers of students as they are free to join; they provide a wide range of courses. They allow for space and time flexibility and their participants can benefit from various online communication tools and access to quality content.

The coordinating Department/Centre/Office shall monitor every student to adopt the courses online of their choice and preference on Swayam portal. The duration of courses will vary depending on the level and credit points. Courses offered in the duration of 4-10 weeks for 2 to 3 credits at diploma level are to be opted. Students can get a certificate after registering and attending the classes and submitting the assignments/quizzes and qualifying nationwide conducted written exam.

On successful completion of each course, the institution offering the MOOCs course would issue the certificate, along with the number of credits and grades, through which the student can get credits transferred into his marks certificate issued by the parent institution. There may be standard norms for the host Institution to conduct the course that may include continuous evaluation through assignments, online quizzes, case studies, online writing exercises, term examinations, student feedback, online forum management, etc. The coordinating Department/Centre/Office of the respective department shall monitor every student and submit to the Office of Examinations, a score sheet before the close of the even semester.

5. Viva Voce Assessment

This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand. It will also include questions on safety, quality, environment and equipment's etc. Ask questions on non-prescribed tasks to ensure that the learners have complete knowledge on the assessment

6. Industrial / In-house Training Assessment

The two mandatory internships after First and Second Year of are to be assessed in 3rd and 5th semester subsequently. The trainng should be preferably done in the industry but can also be in house depending upon the stream and availability of resources in and around the institute. Faculty should be assigned each student and made responsible for the evaluation and assessment of the training. Formative assessment should be taken from the industry/institute/ department on the basis of performance, behavior and learning capabilities. Summative evaluation may comprise of weight ages on the basis of report submission / presentation followed by viva-voce of the relevant subject.

7. Professional Industrial Training Assessment

Evaluation of professional industrial training report and viva-voce/ presentation aims at assessing students' understanding of industrial processes, practices in the industry/field and their ability to engage in activities related to problem-solving in industrial setting as well as understanding of application of learnt knowledge and skills in real life situation. Formative and summative evaluation may comprise of weight ages to performance on task, quality of product, general behavior and it should be followed by viva-voce of the relevant subject.

The formative assessment should include the evaluation from the employer where the student is doing his training in the ratio of 40:60. The final assessment will be the combination of the

employer assessment and evaluation by the faculty of the institute which shall include report submission/ presentation/ seminar followed by viva-voce of the relevant subject.

SGPA AND CGPA ASSESSMENT

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the marks scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$SGPA\ (Si) = \sum(Ci \times Gi) / \sum Ci$$

where Ci is the number of credits of the ith course and Gi is the marks scored by the student in the ith course.

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA = \sum(Ci \times Si) / \sum Ci$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

25. TEACHING LEARNING TOOLS FOR EFFECTIVE IMPLEMENTATION

For effective implementation of curriculum, the faculty and staff of institutions have to play a vital role in planning instructional experiences for the courses in four different environments viz. class-room, laboratory, library and field and execute them in right perspective. It is emphasized that only a proper mix of different teaching methods in all these places of instruction can bring the changes in students behaviour as stipulated in the curriculum document. It is important to understand curriculum document holistically and further be aware of intricacies of Teaching-Learning Tools for achieving curriculum objectives. Given below are certain recommendations which may help in carrying out teaching-learning effectively:

PROGRAMME LEVEL RECOMMENDATIONS

1. Curriculum implementation takes place at programme, course and class-room level respectively and synchronization among them is required for its success. The first step towards achieving synchronization is to read curriculum document holistically and understand its rationale and philosophy.

2. An academic plan needs to be prepared at institute level. The Head of the institute has a great role to play in its dissemination and percolation up to grass-root level.

3. Heads of Department are required to prepare academic plan at department level referring to institutional academic plan.

COURSE LEVEL RECOMMENDATIONS

Teachers are educational managers at class room level and their success in achieving course level objectives lies in using course plan and their judicious execution which is very important for the success of programme by achieving its objectives. Teachers are required to plan various instructional experiences viz. theory lecture, expert lectures, lab/workshop practical's, guided library exercises, field visits, study tours, camps etc. In addition, they have to carry out progressive assessment of theory, assignments, library, practical's and field experiences. Teachers are also required to do all these activities within a stipulated period which is made available to them in the academic plan at Board level. With the amount of time to their credit, it is essential for them to use it judiciously by planning all above activities properly and ensure

execution of the plan effectively. Following is the gist of suggestions for subject teachers for effective utilization of Teaching Learning Tools to achieve the course objectives:

1. Teachers need to ensure attainment of course outcomes so as to help the students achieve program outcomes and also meet the desired learning outcomes in five domains of NSQF i.e. Process, Professional knowledge, Professional skills, Core skills and Responsibility.

2. Teachers are required to prepare a course plan, taking into account number of weeks available and courses to be taught.

3. Teachers are required to prepare lesson plan for every theory class. This plan may comprise of contents to be covered, learning material for execution of a lesson plan.

4. Teachers are required to plan for expert lectures from field/industry. For this, necessary steps need to be taken such as planning in advance, identifying field experts, making correspondence to invite them, taking necessary budgetary approval etc.

5. Teachers are required to plan for guided library exercises by identification of course specific experience requirement, setting time, assessment, etc. The assignments and seminars can be thought of as terminal outcome of library experiences.

6. Concept based industrial/field visits may be planned and executed for such contents of course which are abstract in nature and no other requisite resources are readily available in institute to impart them effectively.

7. Lot of focus needs to be laid on skill development. There is need for planning practical experiences in right perspective. These slots in a course are the avenues to use problem based learning and experiential learning effectively. The development and use of lab manuals will enable the institutes to provide lab experiences effectively.

8. Emphasis should to laid on developing soft skills like communication skills, personality Development, self-learning, inter personal skills, problem solving, and creativity etc.

9. Where ever possible, it is essential to use activity based learning rather than relying on delivery based conventional teaching all the time. While teaching, the teacher should make extensive use of audio visual aids such as video films, power point presentations and IT tools.

10. Teachers may take an initiative in establishing liaison with industries and field organizations for imparting field experiences to the students.

11. To enhance digital learning, open electives and multi-disciplinary electives have been provided in the curriculum to be taken up in the form of MOOCs. For Open electives, some courses may be identified out of the prescribed list given in the curriculum keeping in mind the interest of students. Similarly, for multi-disciplinary electives, courses to be offered may be identified by considering their relevance and utility. Every year SWAYAM is notifying the list of courses which are going to be offered in forthcoming even and odd semester. The institute needs to select the courses that are offered on SWAYAM platform or any other online platform.

12. For effective implementation of Massive Open Online Courses (MOOCs), a faculty member in the department may be identified and given the responsibility to coordinate various activities related to MOOCs. The concerned faculty member will facilitate in registration of students for MOOCs. The faculty member will also be responsible for compiling the result of students on the completion of MOOCs and pass on the information to the concerned authority.

13. Flexibility has been provided in the curriculum for the students to choose a course related to the discipline as per their interest. For effective implementation of discipline-specific electives, the institute should identify some courses from the list of courses prescribed in the curriculum. The courses should be selected and offered keeping in mind the interest of students, infrastructure and expertise available in and around the institute related to the courses. Option for discipline-specific elective may be taken from students through a form and a course, with more than 10 students opting for it, may be run.

14. Students should be made aware about issues related to ecology and environment, safety, concern for wastage of energy and other resources etc.

15. Any relevant contents beyond the syllabus may be covered by the teacher or experts in extra time.

16. Minor project should be identified and allocated taking into consideration the inputs from industry stake-holders, and departmental faculty. The minor project work should be such

that it enhances the fundamental skill-sets of the students from industry perspective and subsequently helps them to handle major project.

17. For major project work, students may be given relevant and well thought out problems, which are purposeful and develop practical skills. This will help the students in developing creativity and confidence for their gainful employment.

18. A Project bank may be developed in consultation with related industry, research institutes and other relevant field organizations. It may be ensured that that the students take up some live problems being faced by industry as part of project work.

26. LIST OF EXPERTS

1. Controller of Examination, Haryana State Board of Technical Education, Panchkula.
2. Controller of Administration & Finance, Haryana State Board of Technical Education, Panchkula.
3. Joint Secretary, Haryana State Board of Technical Education, Panchkula.
4. Deputy Secretary, Training & Placement, Haryana State Board of Technical Education, Panchkula.
5. Deputy Secretary, Examination, Haryana State Board of Technical Education, Panchkula.
6. Deputy Secretary, Academic, Haryana State Board of Technical Education, Panchkula.
7. Assistant Secretary, Academic, Haryana State Board of Technical Education, Panchkula.
8. Dr. Puneet Sood, Director, National Institute of Fashion Technology, Kannur.
9. Mr. Pramod Kumar, Associate Professor, Department of Fashion Design, National Institute of Fashion Design, Panchkula.
10. Ms. Shangrella MK, Assistant Professor, National Institute of Fashion Technology, Kannur.
11. Dr. Vishu Arora, Associate Professor, NIFT, Panchkula.
12. Mr. Balram Maurya, Manager, Marketing and Merchandising, Faridabad, Haryana.
13. Dr. Sandeep Sachan, Director, NIFT, Daman Due.
14. Dr. Sangeeta Dewan, Associate Professor, Govt. Home Science College, Chandigarh.
15. Ms. Radhika Sen, Creative Associate, Department of Fashion Design, Byju & Whitehatjr, Banglore.
16. Mr. Naveen Bhutani, General Manager, Quality Department, Richa Global Exports Pvt. Ltd., Mansesar, Gurgaon

17. Mr. Manoj Kumar, Senior Merchandiser, Merchandising Department, Pearl Global Industry, Gurgaon.

18. Mr. Tarun Kumar, HoD, Department of Fashion Technology, Government Polytechnic, Hisar.

19. Mr. Mohit Juneja, Lecturer, Department of Fashion Technology, Government Polytechnic, Hisar.

20. Mr. Sunny Pannu, Senior Lecturer, Department of Fashion Technology, Government Polytechnic, Bhiwani.

21. Ms. Sonia, HoD, Department of Fashion Design, Government Polytechnic for Women, Faridabad.

22. Ms. Kavita, HoD, Department of Fashion Design, Government Polytechnic, Hisar.

23. Ms. Shruti Nigam, Founder, Department of Textile Design, Yellow Stitch, Mohali.

24. Smt. Pushpa Rani, Senior Lecturer, Applied Science Department, Government Polytechnic, Sonipat, Haryana.

25. Smt. Krishna Bhoria, Lecturer, Applied Science Department, Government Polytechnic, Ambala, Haryana.

26. Smt. Preetpal Kaur, Guest Faculty, Applied Science Department, Government Polytechnic, Ambala, Haryana.

27. Ms. Monika, Lecturer, Applied Science Department, Seth Jai Parkash Polytechnic, Damla, Haryana.

28. Dr Neena Sharma, English Department, MCM College, Chandigarh.

29. Dr. Vidhi Grover, Lecturer, Applied Science Department, Seth Jai Parkash Polytechnic, Damla.

30. Mr. Tavinder Singh, Lecturer, Applied Science Department, Government Polytechnic, Sirsa.

31. Ms. Sunita Rani, Lecturer, Applied Science Department, Government Polytechnic, Ambala.

32. Dr. KG Srinivasa, Professor CSE, IIIT-Naya Raipur.

33. Dr. Rajesh Mehra, Professor and Head, Curriculum Development Centre, NITTTR, Chandigarh.

34. Dr. AB Gupta, Professor and Head, Education & Educational Management Department, NITTTR, Chandigarh.

35. Er. PK Singla, Associate Professor, Curriculum Development Centre, NITTTR, Chandigarh

36. Dr. SK Gupta, Associate Professor, Curriculum Development Centre, NITTTR, Chandigarh.

37. Dr. Meenakshi Sood, Associate Professor, Curriculum Development Centre, NITTTR, Chandigarh.

27. APPENDIX

Sr. No.	List of Equipment
1.	Drafting tables with cork boards
2.	Full size mirror
3.	Scissors and Shears
4.	Pinking shears
5.	Flatbed Steam Iron with boiler
6.	Pattern punching
7.	Sewing Machine (Treadle operated)
8.	Dress Form
9.	Cutting Tables with felt top
10.	Industrial Single Needle Lock Stitch
11.	Drafting Scales
12.	5 Thread Over lock machine
13.	Electric Irons
14.	Ironing boards
15.	Zig zag stitch machine
16.	Flat Lock machine
17.	Button Hole Machine
18.	Button Stitch Machine
19.	Fixed Bar Double needle lock stitch machine
20.	Split Bar Double needle lock stitch machine
21.	Double needle chain stitch machine
22.	Feed off the arm
23.	Blind stitch machine
24.	Bartack Machine
25.	Electric cutter (Straight knife and round blade)
26.	Notcher
27.	Computer
28.	UPS
29.	Laser Printer
30.	Softwares: MS Office, Corel Draw , Adobe Photoshop, Lectra/GGT/Tuka technology and any other available open source software, fashion studio, GSD, Pro Sew
31.	Set of digitizer, scanner
32.	Computer Speakers 2.1 with woofer
33.	GSM cutter

34.	Hand Held microscope 50 X
35.	Hand Held microscope 100 X
36.	Beasley Balance
37.	Pick Glass
38.	Digital Weighing Balance
39.	Display Board: Fabric
40.	Display Board: Trims
41.	Display Board: Accessories
42.	Fabric Swatch Books (Woven/ Knits/ Prints/ Dyes/ Finishes/etc)
43.	Projection Microscope (Magnification upto 1500 times)
44.	Pilling tester
45.	Light Fastness Tester
46.	Perspiration fastness tester
47.	Colour Matching Cabinet
48.	Button Strength Tester
49.	Zipper strength Tester
50.	Crease recovery tester
51.	Tensile strength tester
52.	Bursting strength
53.	Drape meter
54.	Grading Scale Set (Washing/ Pilling/ Crocking)
55.	Tearing tester
56.	Twist tester
57.	Peel bond strength tester
58.	Thickness gauge 0.01-10mm
59.	Shrinkage Tester
60.	Magnifying Glass (Mounted in stainless steel with handle)
61.	Spirit Lamps
62.	Basin
63.	pH Meter
64.	Rubbing fastness tester
65.	Washing fastness tester
66.	Water Bath with beakers


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