



JAI SHRIRAM ENGINEERING COLLEGE, TIRUPPUR – 638 660

(An Autonomous Institution)

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

CURRICULUM (I to VIII Semester)

SYLLABUS (I to IV Semester)



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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

CURRICULUM FOR I TO VIII SEMESTER



JAI SHRIRAM ENGINEERING COLLEGE, TIRUPPUR – 638 660

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REGULATIONS 2024
B.TECH. FASHION TECHNOLOGY
CHOICE BASED CREDIT SYSTEM
CURRICULUM FOR SEMESTERS I TO VIII
SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UIP001	Induction Programme	-	-	-	-	0
THEORY							
2.	24UHS101	Professional English-I	HSM	3	0	0	3
3.	24UMA101	Matrices and Calculus	BS	3	1	0	4
4.	24UPH101	Engineering Physics	BS	3	0	0	3
5.	24UCY101	Engineering Chemistry	BS	3	0	0	3
6.	24UGE101	Problem Solving and Python Programming	ES	3	0	0	3
7.	24UHS102	தமிழர்மரபு / Heritage of Tamils	HSM	1	0	0	1
PRACTICAL							
8.	24UGE111	Problem Solving and Python Programming Laboratory	ES	0	0	4	2
9.	24UBS111	Physics and Chemistry Laboratory	BS	0	0	4	2
10.	24UHS111	English Laboratory	EE	0	0	2	1
Total Credits				16	1	10	22

SEMESTER II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UHS201	Professional English-II	HSM	2	0	0	2
2.	24UMA201	Statistics and Numerical Methods	BS	3	1	0	4
3.	24UCY201	Chemistry for Fashion Technologists	BS	3	0	0	3
4.	24UBE201	Basic Electrical and Electronics Engineering	ES	3	0	0	3
5.	24UFT201	Fundamentals of Fashion Design	PC	2	0	0	2
6.	24UHS202	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HSM	1	0	0	1
THEORY CUM PRACTICAL							
7.	24UGEI201	Engineering Graphics and Drafting	ES	3	0	2	4
PRACTICAL							
8.	24UGE211	Engineering Fundamentals Laboratory	ES	0	0	4	2
9.	24UFT211	Fashion Designing Laboratory	PC	0	0	3	1.5
10.	24UHS211	Communication Laboratory	EE	0	0	4	2
Total Credits				17	1	13	24.5

SEMESTER III

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S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UMA304	Probability and Statistical Methods	BS	3	1	0	4
2.	24UFT301	Technology of Spinning Processes	PC	2	0	0	2
3.	24UFT302	Fabric Manufacturing	PC	3	0	0	3
4.	24UFT303	Fundamentals of Garment Manufacturing	PC	3	0	0	3
THEORY CUM PRACTICAL							
5.	24UFTI301	Textile Fibre Science and Characteristics	PC	3	0	2	4
6.	24UFTI302	Pattern Engineering	PC	3	0	2	4
PRACTICAL							
7.	24UFT311	Computer Aided Fashion Designing Laboratory	PC	0	0	3	1.5
8.	24UFT312	Garment Components Construction Laboratory	PC	0	0	3	1.5
9.	24UFT313	Professional Development	EE	0	0	2	1
Total Credits				17	1	12	24

SEMESTER IV

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UFT401	Apparel Machineries and Equipment	PC	3	0	0	3
2.	24UFT402	Fabric Structures	PC	3	0	0	3
3.	24UFT403	Apparel Manufacturing Technology	PC	3	0	0	3
4.	24UFT404	Garment Construction	PC	3	0	0	3
5.	24UGE401	Environmental Sciences and Sustainability	BS	2	0	0	2
THEORY CUM PRACTICAL							
6.	24UFTI401	Fabric and Garment Quality Evaluation	PC	3	0	2	4
PRACTICAL							
7.	24UFT411	Fabric Structure Laboratory	PC	0	0	3	1.5
8.	24UFT412	Garment Construction Laboratory I	PC	0	0	3	1.5
9.	24UFT512	Industrial Training/Internship I*	EE	0	0	0	0
Total Credits				17	0	08	21

* Four weeks industrial training/internship carries two credits. Industrial training/internship during IV semester summer vacation will be evaluated in V semester.

SEMESTER V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UGE501	Human Values and Ethics	HSM	3	0	0	3
2.	24UFT501	Apparel Production Planning and Process Control	PC	3	0	0	3
3.		Professional Elective I	PE	3	0	0	3
4.		Professional Elective II	PE	3	0	0	3
5.		Open Elective I	OE	3	0	0	3
6.		Mandatory Course I ^{&}	MC	3	0	0	Non credit
THEORY CUM PRACTICAL							
7.	24UFT1501	Textile Chemical Processing	PC	3	0	2	4
PRACTICAL							
8.	24UFT511	Computer Aided Garment Designing Laboratory	PC	0	0	3	1.5
9.	24UFT512	Industrial Training/Internship I [*]	EE	0	0	0	2
Total Credits				21	0	5	22.5

[&] Mandatory Course I is a Non-credit Course (Student shall select one course from the list given under MC-I).

^{*} Four weeks industrial training/internship carries two credits. Industrial training/internship during IV semester summer vacation will be evaluated in V semester.

SEMESTER VI

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UFT601	Industrial Engineering in Garment Manufacturing	PC	3	0	0	3
2.	24UFT602	Apparel Marketing and Merchandising	PC	3	0	0	3
3.	24UFT603	Advanced Garment Construction	PC	3	0	0	3
4.		Professional Elective III	PE	3	0	0	3
5.		Professional Elective IV	PE	3	0	0	3
6.		Open Elective II	OE	3	0	0	3
7.		Mandatory Course II ^{&}	MC	3	0	0	Non-credit course
PRACTICAL							
8.	24UFT611	Advanced Garment Construction Laboratory	PC	0	0	3	1.5
9.	24UFT612	Design Collection / Portfolio	PC	0	0	3	1.5
10.	24UFT712	Industrial Training / Internship II ^{##}	EE	0	0	0	0
Total Credits				21	0	6	21

[&] Mandatory Course II is a Non-credit Course (Student shall select one course from the list given under MC-II).

^{##} Four weeks industrial training/internship carries two credit. Industrial training/Internship during VI semester summer vacation will be evaluated in VII semester.

SEMESTER VII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
THEORY							
1.	24UMG701	Principles of Management	HSM	3	0	0	3
2.	24UFT701	Apparel Costing	PC	3	0	0	3
3.		Professional Elective V	PE	3	0	0	3
4.		Professional Elective VI	PE	3	0	0	3
5.		Open Elective III	OE	3	0	0	3
PRACTICAL							
6.	24UFT711	Apparel Product Engineering Laboratory	PC	0	0	4	2
7.	24UFT712	Industrial Training/Internship II ^{##}	EE	0	0	0	2
Total Credits				15	0	4	19

^{##}Four weeks industrial training/internship carries two credit. Industrial training/Internship during VI semester summer vacation will be evaluated in VII semester.

SEMESTER VIII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
PRACTICAL							
1.	24UFT811	Project Work/Internship [#]	EE	0	0	20	10
Total Credits				0	0	20	10

[#] 15 weeks of continuous Internship in an organization carries 10 credits.

TOTAL CREDITS: 164

**PROFESSIONAL ELECTIVE COURSES
PROFESSIONAL ELECTIVE I**

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S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP501	Indian Traditional Textiles and Crafts	PE	3	0	0	3
2.	24UFTP502	Color Science and Psychology	PE	3	0	0	3
3.	24UFTP503	Fashion Evolution	PE	3	0	0	3
4.	24UFTP504	Fashion Communication	PE	3	0	0	3
5.	24UFTP505	Digital Fashion and Apparel Design	PE	3	0	0	3
6.	24UFTP506	Fashion Psychology	PE	3	0	0	3

PROFESSIONAL ELECTIVE II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP507	Fashion Forecasting	PE	3	0	0	3
2.	24UFTP508	Visual Merchandising	PE	3	0	0	3
3.	24UFTP509	Apparel Retail Management	PE	3	0	0	3
4.	24UFTP510	Apparel Brand Management	PE	3	0	0	3
5.	24UFTP511	Digital Marketing and E-Business	PE	3	0	0	3
6.	24UFTP512	Fashion Photography	PE	3	0	0	3

PROFESSIONAL ELECTIVE III

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP601	Fashion Product Development	PE	3	0	0	3
2.	24UFTP602	Clothing Fit and Comfort	PE	3	0	0	3
3.	24UFTP603	Garment Finishing and Care	PE	3	0	0	3
4.	24UFTP604	Textile Product Development	PE	3	0	0	3
5.	24UFTP605	Home Textiles	PE	3	0	0	3
6.	24UFTP606	Apparel Trims, Accessories and Embellishments	PE	3	0	0	3

PROFESSIONAL ELECTIVE IV

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP607	Computer Applications in Apparel Manufacturing	PE	3	0	0	3
2.	24UFTP608	Advanced Technologies and Automations for Apparel Industry	PE	3	0	0	3
3.	24UFTP609	Lean Manufacturing	PE	3	0	0	3
4.	24UFTP610	Supply Chain Management for Apparel Industry	PE	3	0	0	3
5.	24UFTP611	Social Compliances and Quality Assurance in Apparel Industry	PE	3	0	0	3
6.	24UFTP612	ERP and MIS in Apparel Industry	PE	3	0	0	3

PROFESSIONAL ELECTIVE V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP701	Entrepreneurship in Apparel Manufacture	PE	3	0	0	3
2.	24UFTP702	Sustainable Apparel Business Management	PE	3	0	0	3
3.	24UFTP703	International Textile and Apparel Business Management	PE	3	0	0	3
4.	24UFTP704	Energy Management in Apparel Industry	PE	3	0	0	3
5.	24UFTP705	Operation Research in Apparel Industry	PE	3	0	0	3
6.	24UFTP706	Human Resource Management	PE	3	0	0	3

PROFESSIONAL ELECTIVE VI

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UFTP707	Protective Garments	PE	3	0	0	3
2.	24UFTP708	Intimate Apparels	PE	3	0	0	3
3.	24UFTP709	Smart Textiles and Garments	PE	3	0	0	3
4.	24UFTP710	Sports Textiles and Garments	PE	3	0	0	3
5.	24UFTP711	Medical Textiles	PE	3	0	0	3
6.	24UFTP712	Leather Garment Technology	PE	3	0	0	3

MANDATORY COURSES I

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UMC801	Introduction to Women and Gender Studies	MC	3	0	0	0
2.	24UMC802	Automotive Safety	MC	3	0	0	0
3.	24UMC803	State, Nation Building and Politics in India	MC	3	0	0	0
4.	24UMC804	Disaster Risk Reduction and Management	MC	3	0	0	0
5.	24UMC805	Film Appreciation	MC	3	0	0	0
6.	24UMC806	Elements of Literature	MC	3	0	0	0
7.	24UMC807	Inclusive Work Culture	MC	3	0	0	0
8.	24UMC808	Quality Systems	MC	3	0	0	0
9.	24UMC809	Industrial Practices and Requirements	MC	3	0	0	0

MANDATORY COURSES II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UMC901	Well Being with Traditional Practices - Yoga, Ayurveda and Siddha	MC	3	0	0	0
2.	24UMC902	History of Science and Technology in India	MC	3	0	0	0
3.	24UMC903	Political and Economic Thought for a Humane Society	MC	3	0	0	0
4.	24UMC904	Industrial Safety	MC	3	0	0	0
5.	24UMC905	Quantitative and verbal proficiency	MC	3	0	0	0
6.	24UMC906	Industrial Hydraulic Circuits	MC	3	0	0	0
7.	24UMC907	Electrical Safety	MC	3	0	0	0

OPEN ELECTIVES

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	C
1.	24UCEO01	Augmented Reality/Virtual Reality	OE	3	0	0	3
2.	24UCEO02	Remote Sensing Concepts	OE	3	0	0	3
3.	24UCEO03	Geographical Information System	OE	3	0	0	3
4.	24UCEO04	Fire Safety Engineering	OE	3	0	0	3
5.	24UCSO01	Java Programming	OE	3	0	0	3
6.	24UCSO02	UI & UX Design	OE	3	0	0	3
7.	24UCSO03	Cloud Computing	OE	3	0	0	3
8.	24UCSO04	Data Science	OE	3	0	0	3
9.	24UEEO01	Renewable Energy Technologies	OE	3	0	0	3
10.	24UEEO02	Hybrid Electric Vehicles	OE	3	0	0	3
11.	24UEEO03	Introduction to PLC Programming	OE	3	0	0	3
12.	24UEEO04	Energy Conservation & Management	OE	3	0	0	3
13.	24UEEO05	Fundamentals of Electronic Devices	OE	3	0	0	3
14.	24UEEO06	Batteries and Management System	OE	3	0	0	3
15.	24UEEO07	Sensors and Actuators	OE	3	0	0	3
16.	24UEEO08	Electrical, Electronic & Magnetic Materials	OE	3	0	0	3
17.	24UECO01	Basics of Communication Technologies	OE	3	0	0	3
18.	24UECO02	Image Processing	OE	3	0	0	3
19.	24UECO03	Basics of IoT	OE	3	0	0	3
20.	24UECO04	Introduction to PLC Programming	OE	3	0	0	3
21.	24UECO05	Sensors for Engineering Applications	OE	3	0	0	3
22.	24UECO06	Industry 4.0 and Industrial IoT	OE	3	0	0	3
23.	24UFTO01	Basics of Textile Technology	OE	3	0	0	3
24.	24UFTO02	Concepts of Fashion and Design	OE	3	0	0	3
25.	24UFTO03	Garment Manufacturing Technology	OE	3	0	0	3
26.	24UFTO04	Retail Management	OE	3	0	0	3
27.	24UFTO05	Industrial Engineering for Garment Industry	OE	3	0	0	3
28.	24UFTO06	Fashion Branding and Advertisement	OE	3	0	0	3
29.	24UMEO01	Fundamentals of Robotics	OE	3	0	0	3
30.	24UMEO02	Nano Technology	OE	3	0	0	3
31.	24UMEO03	Reverse Engineering	OE	3	0	0	3
32.	24UMEO04	Industrial Engineering	OE	3	0	0	3
33.	24UMEO05	Introduction to Additive Manufacturing	OE	3	0	0	3
34.	24UMEO06	Energy Conservation in Industries	OE	3	0	0	3
35.	24UITO01	Digital Image Processing and Its Applications	OE	3	0	0	3
36.	24UITO02	Fundamentals of Databases	OE	3	0	0	3
37.	24UITO03	Internet Programming	OE	3	0	0	3
38.	24UITO04	Fundamentals of Internet of Things	OE	3	0	0	3
39.	24UITO05	Fundamentals of Blockchain	OE	3	0	0	3

CREDITS SUMMARY

S. No	Course Components	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1.	HSM	4	3			3		3		13
2.	BS	12	7	4	2					25
3.	ES	5	9							14
4.	PC		3.5	19	19	8.5	12	5		67
5.	PE					6	6	6		18
6.	OE					3	3	3		9
7.	EE	1	2	1		2		2	10	18
8.	MC					√	√			√
Total Credits		22	24.5	24	21	22.5	21	19	10	164

Total Credits for the entire Programme: 164

COMPARISON OF CREDIT SUMMARY

S. No.	Course Components	AICTE Recommendation		Anna University Curriculum R2021		JSREC Autonomous Curriculum R2024	
		Credits	% Credits	Credits	% Credits	Credits	% Credits
1	Humanities, Social Science and Management (HSM)	12	7%	12	7%	13	8%
2	Basic Sciences (BS)	32	20%	25	15%	25	15%
3	Engineering Sciences (ES)	29	18%	16	10%	14	9%
4	Professional Core (PC)	52	32%	63	39%	67	41%
5	Professional Electives (PE)	15	9%	18	11%	18	11%
6	Open Electives (OE)	9	5%	12	7%	9	5%
7	Employment Enhancement Course (EE)	15	9%	18	11%	18	11%
8	Mandatory (Non-Credit Course (MC)	-	-	-	-	√	√
TOTAL CREDITS		164	100%	164	100%	164	100%



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B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR I SEMESTER

24UHS101	PROFESSIONAL ENGLISH-I (Common to all Branches)	L	T	P	C
		3	0	0	3

Prerequisites:

- Basic knowledge in language usage

COURSE OBJECTIVES:

- To improve the communicative competence of learners
- To learn to use basic grammatical structures in suitable contexts
- To acquire lexical competence and use them appropriately in a sentence and understand their meaning in a text
- To help learners use language effectively in professional contexts
- To develop learners' ability to read and write complex texts, summaries, articles, blogs, definitions, essays and user manuals

UNIT-I	INTRODUCTION TO FUNDAMENTALS OF COMMUNICATION	9
<p>Reading - Reading brochures (technical context), telephone messages / social media messages relevant to technical contexts and emails. Writing - Writing emails / letters introducing oneself. Grammar - Present Tense (simple and progressive); Question types: Wh/ Yes or No/ and Tags. Vocabulary - Synonyms; One word substitution; Abbreviations & Acronyms (as used in technical contexts).</p>		

UNIT-II	NARRATION AND SUMMATION	9
<p>Reading - Reading biographies, travelogues, newspaper reports, Excerpts from literature, and travel & technical blogs. Writing - Guided writing-- Paragraph writing Short Report on an event (field trip etc.) Grammar -Past tense (simple); Subject-Verb Agreement; and Prepositions. Vocabulary - Word forms (prefixes& suffixes); Synonyms and Antonyms. Phrasal verbs.</p>		

UNIT-III	DESCRIPTION OF A PROCESS / PRODUCT	9
<p>Reading - Reading advertisements, gadget reviews; user manuals. Writing - Writing definitions; instructions; and Product /Process description. Grammar - Imperatives; Adjectives; Degrees of comparison; Present & Past Perfect Tenses. Vocabulary - Compound Nouns, Homonyms; and Homophones, discourse markers (connectives & sequence words).</p>		

UNIT-IV	CLASSIFICATION AND RECOMMENDATIONS	9
<p>Reading - Newspaper articles; Journal reports -and Non Verbal Communication (tables, pie charts etc.,). Writing - Note-making / Note-taking (*Study skills to be taught, not tested); Writing recommendations; Transferring information from non verbal (chart, graph etc, to verbal mode) Grammar - Articles; Pronouns - Possessive & Relative pronouns. Vocabulary - Collocations; Fixed / Semi fixed expressions.</p>		

UNIT-V	EXPRESSION	9
<p>Reading - Reading editorials; and Opinion Blogs; Writing - Essay Writing (Descriptive or narrative). Grammar - Future Tenses, Punctuation; Negation (Statements & Questions); and Simple, 27 Compound & Complex Sentences. Vocabulary - Cause & Effect Expressions - Content vs Function words.</p>		

L: 45	T: 00	P: 00	Total : 45 Periods
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HEAD OF THE DEPARTMENT
 Dept. of Science & Humanities,
 Jay Shriram Engineering College
 Dharapuram Road, Avinashipalayam,
 TIRUPUR -638 660, Tamilnadu.

TEXT BOOKS

1. English for Engineers & Technologists Orient Blackswan Private Ltd. Department of English, Anna University, (2020 edition)
2. English for Science & Technology Cambridge University Press, 2021. Authored by Dr. Veena Selvam, Dr. Sujatha Priyadarshini, Dr. Deepa Mary Francis, Dr. KN. Shoba, and Dr. Lourdes Joevani, Department of English, Anna University.

REFERENCES

1. Technical Communication – Principles And Practices By Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2016, New Delhi.
2. A Course Book On Technical English By Lakshminarayanan, Scitech Publications (India) Pvt. Ltd.
3. English For Technical Communication (With CD) By Aysha Viswamohan, Mcgraw Hill Education, ISBN : 0070264244.
4. Effective Communication Skill, Kulbhusan Kumar, RS Salaria, Khanna Publishing House.
5. Learning to Communicate – Dr. V. Chellammal, Allied Publishing House, New Delhi, 2003.

WEB RESOURCES

- https://www.lisedunetwork.com/the-fundamentals-of-communication/#google_vignette
- <http://hdl.handle.net/10603/58170>
- <https://www.vedantu.com/english/narration>
- <https://asana.com/resources/product-development-process>
- <https://onlinelibrary.wiley.com/doi/10.1155/2019/8043905>

COURSE OUTCOMES

At the end of the course students should be able to:

CO1: To use appropriate words in a professional context

CO2: To gain understanding of basic grammatical structures and use them in right context

CO3: To read and infer the denotative and connotative meanings of technical texts

CO4: To read and interpret information presented in tables, charts and other graphic forms

CO5: To write definitions, descriptions, narrations and essays on various topics


HEAD OF THE DEPARTMENT
Dept. of Science & Humanities,
Jay Shriram Engineering College
Dharapuram Road, Avinashipalayam,
TIRUPUR -638 660, Tamilnadu.

24UMA101	MATRICES AND CALCULUS (Common to All Branches)	L	T	P	C
		3	1	0	4

Prerequisites:

- Knowledge in basic calculus

COURSE OBJECTIVES:

- To develop the use of matrix algebra techniques that is needed by engineers for practical applications.
- To familiarize the students with differential calculus.
- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To make the students understand various techniques of integration.
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications.

UNIT-I	MATRICES	9 + 3
Eigenvalues and Eigenvectors of a real matrix – Characteristic equation – Properties of Eigenvalues and Eigenvectors – Cayley - Hamilton theorem – Diagonalization of matrices by orthogonal transformation – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms – Applications: Stretching of an elastic membrane.		


UNIT-II	DIFFERENTIAL CALCULUS	9 + 3
Representation of functions - Limit of a function - Continuity - Derivatives - Differentiation rules (sum, product, quotient, chain rules) - Implicit differentiation - Logarithmic differentiation - Applications : Maxima and Minima of functions of one variable.		

UNIT-III	FUNCTIONS OF SEVERAL VARIABLES	9 + 3
Partial differentiation – Homogeneous functions and Euler's theorem – Total derivative – Change of variables – Jacobians – Partial differentiation of implicit functions – Taylor's series for functions of two variables – Applications : Maxima and minima of functions of two variables and Lagrange's method of undetermined multipliers.		

UNIT-IV	INTEGRAL CALCULUS	9 + 3
Definite and Indefinite integrals - Substitution rule - Techniques of Integration: Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integration of rational functions by partial fraction, Integration of irrational functions - Improper integrals - Applications: Hydrostatic force and pressure, moments and centres of mass.		

UNIT-V	MULTIPLE INTEGRALS	9 + 3
Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids – Change of variables in double and triple integrals – Applications: Moments and centres of mass, moment of inertia.		

L:45	T: 15	P: 00	Total : 60 Periods
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 Jay Shriram Engineering College
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 TIRUPUR -638 660, Tamilnadu.

TEXT BOOKS

- Kreyszig, E., "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
- Grewal, B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2018.
- James Stewart, "Calculus: Early Transcendentals", Cengage Learning, 8th Edition, New Delhi, 2015. [For Units II & IV - Sections 1.1, 2.2, 2.3, 2.5, 2.7 (Tangents problems only), 2.8, 3.1 to 3.6, 3.11, 4.1, 4.3, 5.1 (Area problems only), 5.2, 5.3, 5.4 (excluding net change theorem), 5.5, 7.1 - 7.4 and 7.8].

REFERENCES

- Anton. H, Bivens. I and Davis. S, " Calculus ", Wiley, 10th Edition, 2016
- Bali. N., Goyal. M. and Watkins. C., "Advanced Engineering Mathematics", Firewall Media (An imprint of Lakshmi Publications Pvt., Ltd.), New Delhi, 7th Edition, 2009.
- Jain. R.K. and Iyengar. S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition, 2016.
- Narayanan. S. and Manicavachagom Pillai. T. K., "Calculus" Volume I and II, S. Viswanathan Publishers Pvt. Ltd., Chennai, 2009.
- Ramana. B.V., "Higher Engineering Mathematics", McGraw Hill Education Pvt. Ltd, New Delhi, 2016.
- Srimantha Pal and Bhunia. S.C, "Engineering Mathematics "Oxford University Press, 2015.
- Thomas. G. B., Hass. J, and Weir. M.D, "Thomas Calculus ", 14th Edition, Pearson India, 2018.

WEB RESOURCES

- <http://explained.ai/matrix-calculus/index.html>
- <https://www.comp.nus.edu.sg/~cs5240/lecture/matrix-differentiation.pdf>
- <https://github.com/LynnHo/Matrix-Calculus>
- <https://nptel.ac.in/>

COURSE OUTCOMES

At the end of the course students should be able to:


CO1: Use the matrix algebra methods for solving practical problems.

CO2: Apply differential calculus tools in solving various application problems.

CO3: Able to use differential calculus ideas on several variable functions.

CO4: Apply different methods of integration in solving practical problems.

CO5: Apply multiple integral ideas in solving areas, volumes and other practical problems.


HEAD OF THE DEPARTMENT
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24UPH101	ENGINEERING PHYSICS (Common to All Branches)	L	T	P	C
		3	0	0	3

Prerequisites:

Nil

COURSE OBJECTIVES:

- To make the students effectively achieve an understanding of mechanics.
- To enable the students to gain knowledge of electromagnetic waves and its applications.
- To introduce the basics of oscillations, optics and lasers.
- Equipping the students to successfully understand the importance of quantum physics.
- To motivate the students towards the applications of quantum mechanics.

UNIT-I	MECHANICS	9
<p>Multiparticle dynamics: Center of mass (CM) – CM of continuous bodies – motion of the CM – kinetic energy of system of particles. Rotation of rigid bodies: Rotational kinematics – rotational kinetic energy and moment of inertia - theorems of M.I –moment of inertia of continuous bodies – M.I of a diatomic molecule - torque – rotational dynamics of rigid bodies – conservation of angular momentum – rotational energy state of a rigid diatomic molecule - gyroscope - torsional pendulum – double pendulum –Introduction to nonlinear oscillations.</p>		

UNIT-II	ELECTROMAGNETIC WAVES	9
<p>The Maxwell's equations - wave equation; Plane electromagnetic waves in vacuum, Conditions on the wave field - properties of electromagnetic waves: speed, amplitude, phase, orientation and waves in matter - polarization - Producing electromagnetic waves - Energy and momentum in EM waves: Intensity, waves from localized sources, momentum and radiation pressure - Cell-phone reception. Reflection and transmission of electromagnetic waves from a non-conducting medium-vacuum interface for normal incidence.</p>		

UNIT-III	OSCILLATIONS, OPTICS AND LASERS	9
<p>Simple harmonic motion - resonance –analogy between electrical and mechanical oscillating systems - waves on a string - standing waves - traveling waves - Energy transfer of a wave - sound waves - Doppler effect. Reflection and refraction of light waves - total internal reflection - interference –Michelson interferometer –Theory of air wedge and experiment. Theory of laser - characteristics - Spontaneous and stimulated emission - Einstein's coefficients - population inversion - Nd-YAG laser, CO2 laser, semiconductor laser –Basic applications of lasers in industry.</p>		

UNIT-IV	BASIC QUANTUM MECHANICS	9
<p>Photons and light waves - Electrons and matter waves –Compton effect - The Schrodinger equation (Time dependent and time independent forms) - meaning of wave function - Normalization –Free particle - particle in a infinite potential well: 1D,2D and 3D Boxes- Normalization, probabilities and the correspondence principle.</p>		

UNIT-V	APPLIED QUANTUM MECHANICS	9
<p>The harmonic oscillator(qualitative)- Barrier penetration and quantum tunneling(qualitative)- Tunneling microscope - Resonant diode - Finite potential wells (qualitative)- Bloch's theorem for particles in a periodic potential –Basics of Kronig-Penney model and origin of energy bands.</p>		

L:45	T: 00	P: 00	Total : 45 Periods
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 TIRUPUR -638 660, Tamilnadu.

TEXT BOOKS

1. D.Kleppner and R.Kolenkow. An Introduction to Mechanics. McGraw Hill Education (Indian Edition), 2017.
2. E.M.Purcell and D.J.Morin, Electricity and Magnetism, Cambridge Univ.Press, 2013.
3. Arthur Beiser, Shobhit Mahajan, S. Rai Choudhury, Concepts of Modern Physics, McGraw- Hill (Indian Edition), 2017.

REFERENCES

1. R.Wolfson. Essential University Physics. Volume 1 & 2. Pearson Education (Indian Edition), 2009.
2. Paul A. Tipler, Physic – Volume 1 & 2, CBS, (Indian Edition), 2004.
3. K.Thyagarajan and A.Ghatak. Lasers: Fundamentals and Applications, Laxmi Publications, (Indian Edition), 2019.
4. D.Halliday, R.Resnick and J.Walker. Principles of Physics, Wiley (Indian Edition), 2015.
5. N.Garcia, A.Damask and S.Schwarz. Physics for Computer Science Students. Springer- Verlag, 2012.

WEB RESOURCES

- <https://www.youtube.com/watch?v=caitynfev64>
- <https://youtu.be/SqhWxOjBb74>
- <https://youtu.be/F11MHPDd5D8>
- <https://youtu.be/NGGSROr3Tlc>
- <https://youtu.be/b-w4TSkhlhE>

COURSE OUTCOMES

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

CO1: Understand the importance of mechanics.

CO2: Express their knowledge in electromagnetic waves.

CO3: Demonstrate a strong foundational knowledge in oscillations, optics and lasers.

CO4: Understand the importance of quantum physics.

CO5: Compare and apply quantum mechanical principles towards the formation of energy bands.


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24UCY101	ENGINEERING CHEMISTRY (Common to all Branches)	L	T	P	C
		3	0	0	3

Prerequisites:
Nil

COURSE OBJECTIVES:
<ul style="list-style-type: none"> To inculcate sound understanding of water quality parameters and water treatment techniques. To impart knowledge on the basic principles and preparatory methods of nanomaterials. To introduce the basic concepts and applications of phase rule and composites To facilitate the understanding of different types of fuels, their preparation, properties and combustion characteristics. To familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices.

UNIT-I	WATER AND ITS TREATMENT	9
<p>Water: Sources and impurities, Water quality parameters: Definition and significance of- color, odour, turbidity, pH, hardness, alkalinity, TDS, COD and BOD, fluoride and arsenic. Municipal water treatment: primary treatment and disinfection (UV, Ozonation, break-point chlorination). Desalination of brackishwater: Reverse Osmosis. Boiler troubles: Scale and sludge, Boiler corrosion, Caustic embrittlement, Priming & foaming. Treatment of boiler feed water: Internal treatment (Phosphate, Colloidal, Sodiumaluminate and Calgon conditioning) and External treatment—Ion exchange demineralization and Zeolite process.</p>		

UNIT-II	NANO CHEMISTRY	9
<p>Basics: Distinction between molecules, nanomaterials and bulk materials; Size-dependent properties (optical, electrical, mechanical and magnetic); Types of nanomaterials: Definition, properties and uses of – nanoparticle, nanocluster, nanorod, nanowire and nanotube. Preparation of nanomaterials: sol-gel, solvothermal, laser ablation, chemical vapour deposition, electrochemical deposition and electro spinning. Applications of nanomaterials in medicine, agriculture, energy, electronics and catalysis.</p>		

UNIT-III	PHASE RULE AND COMPOSITES	9
<p>Phase rule: Introduction, definition of terms with examples. One component system - water system; Reduced phase rule; Construction of a simple eutectic phase diagram - Thermal analysis; Two component system: lead-silver system - Pattinson process. Composites: Introduction: Definition & Need for composites; Constitution: Matrix materials (Polymer matrix, metal matrix and ceramic matrix) and Reinforcement (fiber, particulates, flakes and whiskers). Properties and applications of: Metal matrix composites (MMC), Ceramic matrix composites and Polymer matrix composites. Hybrid composites - definition and examples.</p>		


UNIT-IV	FUELS AND COMBUSTION	9
<p>Fuels: Introduction: Classification of fuels; Coal and coke: Analysis of coal (proximate and ultimate), Carbonization, Manufacture of metallurgical coke (Otto Hoffmann method). Petroleum and Diesel: Manufacture of synthetic petrol (Bergius process), Knocking - octane number, diesel oil- cetane number; Power alcohol and biodiesel. Combustion of fuels: Introduction: Calorific value - higher and lower calorific values, Theoretical calculation of calorific value; Ignition temperature: spontaneous ignition temperature, Explosive range; Flue gas analysis - ORSAT Method. CO₂ emission and carbon footprint.</p>		


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UNIT-V	ENERGY SOURCES AND STORAGE DEVICES	9
Stability of nucleus: mass defect (problems), binding energy; Nuclear energy: light water nuclear power plant, breeder reactor. Solar energy conversion: Principle, working and applications of solar cells; Recent developments in solar cell materials. Wind energy; Geothermal energy; Batteries: Types of batteries, Primary battery - dry cell, Secondary battery - lead acid battery and lithium-ion- battery; Electric vehicles - working principles; Fuel cells: H ₂ -O ₂ fuel cell, microbial fuelcell; Supercapacitors: Storage principle, types and examples.		

L: 45	T: 00	P: 00	Total : 45 Periods
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TEXT BOOKS
<ul style="list-style-type: none"> • P. C. Jain and Monica Jain, "Engineering Chemistry", 17th Edition, Dhanpat Rai Publishing Company (P) Ltd, New Delhi, 2018. • Sivasankar B., "Engineering Chemistry", Tata McGraw-Hill Publishing Company Ltd, New Delhi, 2008. • S.S. Dara, "A text book of Engineering Chemistry", S. Chand Publishing, 12th Edition, 2018.
REFERENCES
<ul style="list-style-type: none"> • B. S. Murty, P. Shankar, Baldev Raj, B. B. Rath and James Murday, "Text book of nanoscience and nanotechnology", Universities Press-IIM Series in Metallurgy and Materials Science, 2018. • O.G. Palanna, "Engineering Chemistry" McGraw Hill Education (India) Private Limited, 2nd Edition, 2017. • Friedrich Emich, "Engineering Chemistry", Scientific International PVT, LTD, New Delhi, 2014. • Shikha Agarwal, "Engineering Chemistry-Fundamentals and Applications", Cambridge University Press, Delhi, Second Edition, 2019. • O.V. Roussak and H.D. Gesser, Applied Chemistry-A Text Book for Engineers and Technologists, Springer Science Business Media, New York, 2nd Edition, 2013.
WEB RESOURCES
<ul style="list-style-type: none"> • https://testbook.com/ias-preparation/water-treatment • https://onlinelibrary.wiley.com/doi/full/10.1002/nano.202300038 • https://www.pratapsir.com/2023/01/notes-on-phase-rule_21.html • https://en.wikipedia.org/wiki/Fuel
COURSE OUTCOMES
<p>At the end of the course students should be able:</p> <p>CO1: To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.</p> <p>CO2: To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.</p> <p>CO3: To apply the knowledge of phase rule and composites for material selection requirements.</p> <p>CO4: To recommend suitable fuels for engineering processes and applications.</p> <p>CO5: To recognize different forms of energy resources and apply them for suitable applications in energy sectors.</p>


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24UGE101	PROBLEM SOLVING AND PYTHON PROGRAMMING (Common to All Branches)	L	T	P	C
		3	0	0	3

Prerequisites:
Nil

COURSE OBJECTIVES:
<ul style="list-style-type: none"> • To understand the basics of algorithmic problem solving. • To learn to solve problems using Python conditionals and loops. • To define Python functions and use function calls to solve problems. • To use Python data structures - lists, tuples, dictionaries to represent complex data. • To do input/output with files in Python.

UNIT-I	COMPUTATIONAL THINKING AND PROBLEM SOLVING	9
Fundamentals of Computing – Identification of Computational Problems -Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion). Illustrative problems: find minimum in a list, insert a card in a list of sorted cards, guess an integer number in a range, Towers of Hanoi.		

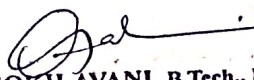
UNIT-II	DATA TYPES, EXPRESSIONS, STATEMENTS	9
Python interpreter and interactive mode, debugging; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.		

UNIT-III	CONTROL FLOW, FUNCTIONS, STRINGS	9
Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays. Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.		

UNIT-IV	LISTS, TUPLES, DICTIONARIES	9
Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Illustrative programs: simple sorting, histogram, Students marks statement, Retail bill preparation.		

UNIT-V	FILES, MODULES, PACKAGES	9
Files and exceptions: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file, Voter's age validation, Marks range validation (0-100).		

L:45	T:0	P:0	Total: 45 PERIODS
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TEXT BOOKS

1. Allen B. Downey, "Think Python: How to Think like a Computer Scientist", 2nd Edition, O'Reilly Publishers, 2016.
2. Karl Beecher, "Computational Thinking: A Beginner's Guide to Problem Solving and Programming", 1st Edition, BCS Learning & Development Limited, 2017.

REFERENCES

1. Paul Deitel and Harvey Deitel, "Python for Programmers", Pearson Education, 1st Edition, 2021.
2. G Venkatesh and Madhavan Mukund, "Computational Thinking: A Primer for Programmers and Data Scientists", 1st Edition, Notion Press, 2021.
3. John V Guttag, "Introduction to Computation and Programming Using Python: With Applications to Computational Modeling and Understanding Data", Third Edition, MIT Press, 2021
4. Eric Matthes, "Python Crash Course, A Hands - on Project Based Introduction to Programming", 2nd Edition, No Starch Press, 2019.
5. Martin C. Brown, "Python: The Complete Reference", 4th Edition, Mc-Graw Hill, 2018.

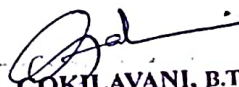
WEB RESOURCES

- <https://www.python.org/>
- <https://nptel.ac.in/courses/106106145/>

COURSE OUTCOMES

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

- CO1: Develop algorithmic solutions to simple computational problems and and execute simple Python programs.
- CO2: Write simple Python programs using conditionals and loops for solving problems.
- CO3: Decompose a Python program into functions.
- CO4: Represent compound data using Python lists, tuples, dictionaries etc.
- CO5: Read and write data from/to files in Python programs.


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24UHS102	HERITAGE OF TAMILS (Common to All Branches)	L	T	P	C
		1	0	0	1

Prerequisites:
Nil

COURSE OBJECTIVES:
<ul style="list-style-type: none"> • Appreciate Tamil art, culture and literature. • Learn the history and culture of Tamil language. • Relate to various art forms and their relevance to development . • Acknowledge the rich heritage and significant achievements of the Tamilians. • Appreciate the contribution of Tamilians to nation building.

UNIT I	LANGUAGE AND LITERATURE	3
Language Families in India - Dravidian Languages – Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.		

UNIT II	HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE	3
Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.		

UNIT III	FOLK AND MARTIAL ARTS	3
Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.		

UNIT IV	THINAI CONCEPT OF TAMILS	3
Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.		

UNIT V	CONTRIBUTION OF TAMILS TO INDIAN NATIONALEMENT AND INDIAN CULTURE	3
Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.		

L:15	T: 00	P: 00	Total : 15 Periods
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TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலாறு - மக்களும் பண்பாடும் - கே .கே .பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணிணித் தமிழ் - (முனைவர் இல .சுந்தரம்.(விகடன் பிரசுரம்).
3. கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை - ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A Joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils – The classical Period (Dr.S.Singaravelu) (Published by: International institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.k.D.Thirunavukkarasu) (Published by: Institute of Tamil Studies).
8. The Contribution of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: Institute of Tamil Studies).
9. Keeladi – Sangam City Civilization on the banks of banks of river Vaigai’ (Jointly Published by: Department of archaeology & Tamil Nadu Text book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (published by: The Author).
11. Porunai Civilization (jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

COURSE OUTCOMES

At the end of the course students should be able:

CO1: Understand the significance of Tamil as a classical language.

CO2: Relate the art and culture in Tamil language.

CO3: Explain the importance of music, dance and martial arts that were derived from Tamil Culture.

CO4: Understand the poetic mode or theme of classical language.

CO5: Relate the contribution of Tamils to Nation building.


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24UHS102	தமிழர் மரபு (Common to All Branches)	L	T	P	C
		1	0	0	1

அலகு I	மொழி மற்றும் இலக்கியம்	3
<p>இந்திய மொழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ஒரு செம்மொழி - தமிழ் செவ்விலக்கியங்கள் - சங்க இலக்கியத்தின் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத்தில் பகிர்தல் அறம் - திருக்குறளில் மேலாண்மைக் கருத்துக்கள் - தமிழ்க் காப்பியங்கள், தமிழகத்தில் சமண, பௌத்த சமயங்களின் தாக்கம் - பக்தி இலக்கியம், ஆழ்வார்கள் மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் - தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி - தமிழ் இலக்கிய வளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.</p>		

அலகு II	மரபு-பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை - சிற்பக் கலை	3
<p>நடுகல் முதல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலைகள் - பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப் பொருட்கள், பொம்மைகள் - தேர் செய்யும் கலை - சுடுமண் சிற்பங்கள் - நாட்டுப்புறத் தெய்வங்கள் - குமரிமுனையில் திருவள்ளூர் சிலை - இசைக் கருவிகள் - மிருதங்கம், பறை, வீணை, யாழ், நாதஸ்வரம் - தமிழர்களின் சமூக பொருளாதார வாழ்வில் கோவில்களின் பங்கு.</p>		

அலகு III	நாட்டுப்புறக் கலைகள் மற்றும் வீர விளையாட்டுகள்	3
<p>தெருக்கூத்து, கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து, ஓயிலாட்டம், தோல்பாவைக் கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்.</p>		

அலகு IV	தமிழர்களின் திணைக் கோட்பாடுகள்	3
<p>தமிழகத்தின் தாவரங்களும், விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள் - தமிழர்கள் போற்றிய அறக்கோட்பாடு - சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் - சங்ககால நகரங்களும் துறை முகங்களும் - சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி - கடல்கடந்த நாடுகளில் சோழர்களின் வெற்றி</p>		

அலகு V	இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு	3
<p>இந்திய விடுதலைப்போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின் பங்கு - கல்வெட்டுகள், கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.</p>		

L:15	T: 00	P: 00	Total : 15 Periods
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TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலாறு - மக்களும் பண்பாடும் - கே .கே .பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் - முனைவர் இல .சுந்தரம்.(விகடன் பிரசுரம்).
3. கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை - ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A Joint publication of TNTB & ESC and RMRL - (in print)
6. Social Life of the Tamils - The classical Period (Dr.S.Singaravelu) (Published by: International institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.k.D.Thirunavukkarasu) (Published by: Institute of Tamil Studies).
8. The Contribution of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: Institute of Tamil Studies).
9. Keeladi - Sangam City Civilization on the banks of banks of river Vaigai' (Jointly Published by: Department of archaeology & Tamil Nadu Text book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (published by: The Author).
11. Porunai Civilization (jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) - Reference Book.


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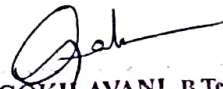
24UGE111	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY (Common to All Branches)	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES:

- To understand the basics of algorithmic problem solving.
- To learn to solve problems using Python conditionals and loops.
- To define Python functions and use function calls to solve problems.
- To use Python data structures - lists, tuples, and dictionaries to represent complex data.
- To do input/output with files in Python.

S.No.	LIST OF EXERCISES:
1	Identification and solving of simple real life or scientific or technical problems, and developing flow charts for the same. (Electricity Billing, Retail shop billing, Sin series, weight of a motorbike, Weight of a steel bar, compute Electrical Current in Three Phase AC Circuited.)
2	Python programming using simple statements and expressions (exchange the values of two variables, circulate the values of n variables, distance between two points).
3	Scientific problems using Conditionals and Iterative loops.(Number series, Number Patterns, pyramid pattern)
4	Implementing real-time/technical applications using Lists, Tuples. (Items present in a library/Components of a car/Materials required for construction of a building –operations of list & tuples).
5	Implementing real-time/technical applications using Sets, Dictionaries. (Language, components of an automobile, Elements of a civil structure, etc.- operations of Sets & Dictionaries).
6	Implementing programs using Functions.(Factorial, largest number in a list, area of shape)
7	Implementing programs using Strings.(reverse,palindrome,charactercount,replacing characters).
8	Implementing programs using written modules and Python Standard Libraries (pandas, numpy. Matplotlib, scipy).
9	Implementing real-time / technical applications using File handling.(copy from one file to another, word count, longest word).
10	Implementing real-time / technical applications using Exception handling.(divide by zero error, voter's age validity, student mark range validation).
11	Exploring Pygame tool.
12	Developing a game activity using Pygame like bouncing ball, carrace etc.

L:00	P:60	T:00	Total: 60 PERIODS
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LIST OF EQUIPMENTS REQUIRED**HARDWARE REQUIREMENTS**

Standard PC

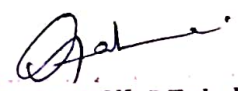
SOFTWARE REQUIREMENTS

1. Windows 7 or higher
2. Python latest version

COURSE OUTCOMES

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

- CO1: Develop algorithmic solutions to simple computational problems
- CO2: Develop and execute simple Python programs.
- CO3: Implement programs in Python using conditionals and loops for solving problems.
- CO4: Deploy functions to decompose a Python program.
- CO5: Process compound data using Python data structures.
- CO6: Utilize Python packages in developing software applications.



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24UBS111	PHYSICS AND CHEMISTRY LABORATORY (Common to All Branches)	L	T	P	C
		0	0	4	2

PHYSICS EXPERIMENTS (Any Seven Experiments)

Prerequisites:

Nil

COURSE OBJECTIVES:

- To learn the proper use of various kinds of physics laboratory equipment.
- To learn how data can be collected, presented and interpreted in a clear and concise manner.
- To learn problem solving skills related to physics principles and interpretation of experimental data.
- To determine error in experimental measurements and techniques used to minimize such error.
- To make the student an active participant in each part of all lab exercises.

LIST OF EXPERIMENTS

1. Torsion pendulum - Determination of rigidity modulus of wire and moment of inertia of regular and irregular objects.
2. Simple harmonic oscillations of cantilever.
3. Non-uniform bending - Determination of Young's modulus.
4. Uniform bending – Determination of Young's modulus.
5. Laser- Determination of the wave length of the laser using grating.
6. Air wedge - Determination of thickness of a thin sheet/wire.
7. a) Optical fibre -Determination of Numerical Aperture and acceptance angle.
b) Compact disc- Determination of width of the groove using laser.
8. Acoustic grating- Determination of velocity of ultrasonic waves in liquids.
9. Ultrasonic interferometer – determination of the velocity of sound and compressibility of liquids.
10. Post office box -Determination of Band gap of a semiconductor.
11. Photoelectric effect.
12. Michelson Interferometer.
13. Melde's string experiment.
14. Experiment with lattice dynamics kit.

Total: 30 Periods

TEXT BOOKS

1. Marko Pinteric, Building Physics, Springer 2017.
2. D.S.Mathur. Elements of Properties of Matter. S Chand & Company, 2010.
3. Hugo Hens, Building Physics: Heat, Air and Moisture, Wiley, 2017.

REFERENCES

- W.R.Stevens. Building Physics: Lighting. Pergamon Press, 2013.
- Hugo Hens, Applied Building Physics, Wiley, 2016.
- K.G.Budinski and M.K.Budinski. Engineering Materials: Properties and Selection. Pearson Education, 2016.
- Peter A. Claisse, Civil Engineering Materials, Elsevier, 2016.


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COURSE OUTCOMES

Upon completion of the course, the students should be able to:

CO1: Understand the functioning of various physics laboratory equipment.

CO2: Use graphical models to analyze laboratory data.

CO3: Use mathematical models as a medium for quantitative reasoning and describing physical reality.

CO4: Access, process and analyze scientific information.

CO5: Solve problems individually and collaboratively.

CHEMISTRY EXPERIMENTS (Any Seven Experiments)

Prerequisites:

Nil

COURSE OBJECTIVES:

- To inculcate experimental skills to test basic understanding of water quality parameters, such as, acidity, alkalinity, hardness, DO, chloride and copper.
- To induce the students to familiarize with electroanalytical techniques such as, pH metry, potentiometry and conductometry in the determination of impurities in aqueous solutions.
- To demonstrate the analysis of metals and alloys.
- To demonstrate the synthesis of nanoparticles.

LIST OF EXPERIMENTS

1. Preparation of Na_2CO_3 as a primary standard and estimation of acidity of a water sample using the primary standard
2. Determination of types and amount of alkalinity in a water sample. Split the first experiment into two
3. Determination of total, temporary & permanent hardness of water by EDTA method.
4. Determination of DO content of water sample by Winkler's method.
5. Determination of chloride content of water sample by Argentometric method.
6. Estimation of copper content of the given solution by Iodometry.
7. Estimation of TDS of a water sample by gravimetry.
8. Determination of strength of given hydrochloric acid using pH meter.
9. Determination of strength of acids in a mixture of acids using conductivity meter.
10. Conductometric titration of barium chloride against sodium sulphate (precipitation titration)
11. Estimation of iron content of the given solution using potentiometer.
12. Estimation of sodium /potassium present in water using a flame photometer.
13. Preparation of nanoparticles ($\text{TiO}_2/\text{ZnO}/\text{CuO}$) by Sol-Gel method.
14. Estimation of Nickel in steel
15. Proximate analysis of Coal

Total: 30 Periods

L: 00	T: 00	P: 60	Total : 60 Periods
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TEXT BOOKS

1. J. Mendham, R. C. Denney, J.D. Barnes, M. Thomas and B. Sivasankar, Vogel's Textbook of Quantitative Chemical Analysis (2009).

WEB RESOURCES

1. <https://en.wikipedia.org/wiki/Titration>
2. [https://en.wikipedia.org/wiki/Conductivity_\(electrolytic\)](https://en.wikipedia.org/wiki/Conductivity_(electrolytic)).

COURSE OUTCOMES

At the end of the course students should be able to:


CO1: To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.

CO2: To determine the amount of metal ions through volumetric and spectroscopic techniques

CO3: To analyse and determine the composition of alloys.

CO4: To learn simple method of synthesis of nanoparticles.

CO5: To quantitatively analyse the impurities in solution by electro analytical techniques.



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24UHS111	ENGLISH LABORATORY (Common to all Branches)	L	T	P	C
		0	0	2	1

Prerequisites:

- Basic knowledge in language usage

COURSE OBJECTIVES:

- To improve the communicative competence of learners
- To help learners use language effectively in academic /work contexts
- To develop various listening strategies to comprehend various types of audio materials like lectures, discussions, videos etc
- To build on students' English language skills by engaging them in listening, speaking and grammar learning activities that are relevant to authentic contexts
- To use language efficiently in expressing their opinions via various media

UNIT-I	INTRODUCTION TO FUNDAMENTALS OF COMMUNICATION	6
Listening for general information-specific details- conversation: Introduction to classmates - Audio / video (formal & informal); Telephone conversation; Listening to voicemail & messages; Listening and filling a form. Speaking - making telephone calls-Self Introduction; Introducing a friend; - 42 politeness strategies- making polite requests, making polite offers, replying to polite requests and offers- understanding basic instructions(filling out a bank application for example).		

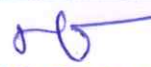
UNIT-II	NARRATION AND SUMMATION	6
Listening - Listening to podcasts, anecdotes / stories / event narration; documentaries and interviews with celebrities. Speaking - Narrating personal experiences / events-Talking about current and temporary situations & permanent and regular situations* - describing experiences and feelings engaging in small talk- describing requirements and abilities.		

UNIT-III	DESCRIPTION OF A PROCESS / PRODUCT	6
Listening - Listen to product and process descriptions; a classroom lecture; and advertisements about products. Speaking – Picture description- describing locations in workplaces- Giving instruction to use the product- explaining uses and purposes- Presenting a product- describing shapes and sizes and weights- talking about quantities(large & small)-talking about precautions.		

UNIT-IV	CLASSIFICATION AND RECOMMENDATIONS	6
Listening – Listening to TED Talks; Listening to lectures - and educational videos. Speaking – Small Talk; discussing and making plans-talking about tasks-talking about progress- talking about positions and directions of movement-talking about travel preparations- talking about transportation.		

UNIT-V	EXPRESSION	6
Listening – Listening to debates/ discussions; different viewpoints on an issue; and panel discussions. Speaking -making predictions- talking about a given topic-giving opinions-understanding a website-describing processes		

L: 00	T: 00	P: 30	Total : 30 Periods
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WEB RESOURCES

- https://www.lisedunetwork.com/the-fundamentals-of-communication/#google_vignette
- <http://hdl.handle.net/10603/58170>
- <https://www.vedantu.com/english/narration>
- <https://asana.com/resources/product-development-process>
- <https://onlinelibrary.wiley.com/doi/10.1155/2019/8043905>

COURSE OUTCOMES

At the end of the course students should be able to:

CO1: To listen to and comprehend general as well as complex academic information

CO2: To listen to and understand different points of view in a discussion

CO3: To speak fluently and accurately in formal and informal communicative contexts

CO4: To describe products and processes and explain their uses and purposes clearly and accurately

CO5: To express their opinions effectively in both formal and informal discussions


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TIRUPPUR – 638 660

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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR II SEMESTER

24UHS201	PROFESSIONAL ENGLISH-II (Common to all Branches)	L	T	P	C
		2	0	0	2

Prerequisites:

- Basic knowledge in language usage

COURSE OBJECTIVES:

- To engage learners in meaningful language activities to improve their reading and writing skills
- To learn various reading strategies and apply in comprehending documents in professional context
- To help learners understand the purpose, audience, contexts of different types of writing
- To develop analytical thinking skills for problem solving in communicative contexts
- To demonstrate an understanding of job applications and interviews for internship and placements

UNIT-I	MAKING COMPARISONS	6
Reading – Reading comprehension task :Reading strategies, Methods - skimming, scanning, paraphrasing vs summarizing, Reading advertisements, user manuals, brochures; Proforma invoices Writing – Professional emails, Email etiquette, Creative Writing-Content writing, blog writing , Grammar –Preposition & Prepositional phrases Vocabulary – Words on Engineering materials		

UNIT-II	EXPRESSING CAUSAL RELATIONS IN SPEAKING AND WRITING	6
Reading - Reading longer technical texts, Reading short articles& Journals Writing -Writing responses to complaints, Letters / emails of complaint, writing a travelogue, Agenda with Minutes of meeting(MoM), Cause and Effect Essays, Grammar - If conditional sentences, Active & Passive Voice transformations,		

UNIT-III	PROBLEM SOLVING	6
Reading - Case Studies, excerpts from literary texts, etc. Writing – Letter to the Editor, Sequence of Jumbled paragraph, Checklists, Hints Development - Problem solution essay / Argumentative Essay. Grammar – Error correction; Modals Vocabulary – Idioms and phrases.		

UNIT-IV	REPORTING OF EVENTS AND RESEARCH	6
Reading –Newspaper articles; Writing – Recommendations, Transcoding, Structure of Reports-Accident Report, Survey Report, Project Report Grammar – Reported Speech, Vocabulary – Conjunctions.		

UNIT-V	THE ABILITY TO PUT IDEAS OR INFORMATION COGENTLY	6
Reading – Company profiles, Statement of Purpose, (SOP), an excerpt of interview with		


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professionals; Writing – Job / Internship application – Cover letter & Resume; Business communication letters, Grammar – Numerical adjectives, Relative Clauses, Vocabulary – Infinitive and Gerunds.

L:30	T: 00	P: 00	Total : 30 Periods
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TEXT BOOKS

1. English for Engineers & Technologists (2020 edition) Orient Blackswan Private Ltd. Department of English, Anna University.
2. English for Science & Technology Cambridge University Press 2021.
3. Authored by Dr. Veena Selvam, Dr. Sujatha Priyadarshini, Dr. Deepa Mary Francis, Dr. KN. Shoba, and Dr. Lourdes Jovani, Department of English, Anna University.

REFERENCES

1. Raman. Meenakshi, Sharma. Sangeeta (2019). Professional English. Oxford university press. New Delhi.
2. Improve Your Writing ed. V.N. Arora and Laxmi Chandra, Oxford Univ. Press, 2001, NewDelhi.
3. Learning to Communicate – Dr. V. Chellammal. Allied Publishers, New Delhi, 2003.
4. Business Correspondence and Report Writing by Prof. R.C. Sharma & Krishna Mohan, Tata Mc Graw Hill & Co. Ltd., 2001, New Delhi.
5. Developing Communication Skills by Krishna Mohan, Meera Bannerji- Macmillan India Ltd. 1990, Delhi.

WEB RESOURCES

- <https://academicguides.waldenu.edu/writingcenter/grammar/comparisons#:~:text=Adjectives%20and%20adverbs%20can%20be,to%20hedge%20or%20boost%20language.>
- <https://www.linkedin.com/pulse/causality-expressed-natural-language-text-vivek-khetan>
- <https://www.sessionlab.com/blog/problem-solving-techniques/>

COURSE OUTCOMES

At the end of the course students should be able to:

CO1: Compare and contrast products and ideas in technical texts

CO2: Identify cause and effects in events, industrial processes through technical texts

CO3: Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format

CO4: Report events and the processes of technical and industrial nature

CO5: Present their opinions in a planned and logical manner, and draft effective resumes in context of job search


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24UMA201	STATISTICS AND NUMERICAL METHODS (Common to All Branches)	L	T	P	C
		3	1	0	4

Prerequisites:

1. Basic Knowledge in Scientific Calculator usage

COURSE OBJECTIVES:

- This course aims at providing the necessary basic concepts of a few statistical and numerical methods and give procedures for solving numerically different kinds of problems occurring in engineering and technology.
- To acquaint the knowledge of testing of hypothesis for small and large samples which plays an important role in real life problems?
- To introduce the basic concepts of solving algebraic and transcendental equations.
- To introduce the numerical techniques of interpolation in various intervals and numerical
- Techniques of differentiation and integration which plays an important role in engineering and technology disciplines.
- To acquaint the knowledge of various techniques and methods of solving ordinary differential equations.

UNIT-I	TESTING OF HYPOTHESIS	9 + 3
Sampling distributions - Tests for single mean, proportion and difference of means (Large and small samples) – Tests for single variance and equality of variances – Chi square test for goodness of fit – Independence of attributes. Application of chi square test.		

UNIT-II	DESIGN OF EXPERIMENTS	9 + 3
One way and two way classifications - Completely randomized design – Randomized block design – Latin square design - 22 factorial design. Application of Design of experiment SPSS software (Practical oriented).		

UNIT-III	SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS	9 + 3
Solution of algebraic and transcendental equations - Fixed point iteration method – Newton Raphson method- Solution of linear system of equations - Gauss elimination method – Pivoting - Gauss Jordan method – Iterative methods of Gauss Jacobi and Gauss Seidel - Eigenvalues of a matrix by Power method and Jacobi's method for symmetric matrices.		

UNIT-IV	INTERPOLATION, NUMERICAL DIFFERENTIATION AND NUMERICAL INTEGRATION	9 + 3
Lagrange's and Newton's divided difference interpolations – Newton's forward and backward difference interpolation – Approximation of derivatives using interpolation polynomials – Numerical single and double integrations using Trapezoidal and Simpson's 1/3 rules.		

UNIT-V	NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS	9 + 3
Single step methods: Taylor's series method - Euler's method - Modified Euler's method - Fourth order Runge-Kutta method for solving first order differential equations - Multi step methods: Milne's and Adams - Bash forth predictor corrector methods for solving first order differential equations.		

L: 45	T: 15	P: 00	Total: 60 Periods
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TEXT BOOKS

1. Grewal, B.S., and Grewal, J.S., "Numerical Methods in Engineering and Science", Khanna Publishers, 10th Edition, New Delhi, 2015.
2. Johnson, R.A., Miller, I and Freund J., "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2015.

REFERENCES

1. Burden, R.L and Faires, J.D, "Numerical Analysis", 9th Edition, Cengage Learning, 2016.
2. Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
3. Gerald. C.F. and Wheatley. P.O. "Applied Numerical Analysis" Pearson Education, Asia, New Delhi, 7th Edition, 2007.
4. Gupta S.C. and Kapoor V. K., "Fundamentals of Mathematical Statistics", Sultan Chand & Sons, New Delhi, 12th Edition, 2020.
5. Spiegel. M.R., Schiller. J. and Srinivasan. R.A., "Schaum's Outlines on Probability and Statistics ", Tata McGraw Hill Edition, 4th Edition, 2012.
6. Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "Probability and Statistics for Engineers and Scientists", 9th Edition, Pearson Education, Asia, 2010.

WEB RESOURCES

- <http://www.davidmlane.com/hyperstat/index.html>
- <http://www.robertniles.com/stats/>
- <http://webserv.jcu.edu/math/ISEP/ISEP.htm>
- <http://rt.uits.iu.edu/visualization/analytics/stats/spss-getting-started-windows.php>
- <http://www.ats.ucla.edu/stat/>

COURSE OUTCOMES

At the end of the course students should be able to:

- CO1: Apply the concept of testing of hypothesis for small and large samples in real life problems.
- CO2: Apply the basic concepts of classifications of design of experiments in the field of agriculture.
- CO3: Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
- CO4: Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
- CO5: Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.


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24UCY201	CHEMISTRY FOR FASHION TECHNOLOGISTS	L	T	P	C
		3	0	0	3

Prerequisites:
Nil


COURSE OBJECTIVES:
<ul style="list-style-type: none"> • Gain proper understanding on spectroscopic and surface analytical techniques. • Impart knowledge to students on the chemistry of surface and interfaces. • Make students well versed on the chemical analysis of oils, fats, soaps & lubricants. • Firmly establish a sound understanding on the student's mind about chemicals and auxiliaries. • Familiarize students with the identification and characteristics of dyes and their applications.

UNIT-I	SPECTROSCOPIC TECHNIQUES	9
Spectroscopy: Electromagnetic spectrum - absorption of radiation - electronic, vibrational and rotational transitions. Width and intensities of spectral lines. Flame photometer, Atomic absorption spectroscopy, UV- Vis, IR spectroscopy, Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM) - principles, instrumentation (Block diagram) and applications		

UNIT-II	CHEMISTRY OF INTERFACES	9
Interface region-curved interfaces-thermodynamics of surfaces - Surface film on liquids. Adsorption of gases on Solids-adsorption isotherms – types. Applications of adsorption studies detergency, wetting, foaming, defoaming, spreading, water repellency.		

UNIT-III	POLYMERS	9
Introduction: Classification of polymers – Natural and synthetic; Thermoplastic and Thermosetting. Functionality – Degree of polymerization. Types and mechanism of polymerization: Addition (Free Radical, cationic and anionic); condensation and copolymerization. Properties of polymers: Tg, Tacticity, Molecular weight – weight average, number average and polydispersity index. Preparation, properties and uses of Nylon6, 6, Polyacrylonitrile ,polyester ,Kevlar and Nomex.		

UNIT-IV	OILS, FATS, SOAPS & LUBRICANTS	9
Chemical constitution, Chemical analysis of oils and fats – acid, saponification and iodine values, Definitions, determinations and significance. Definition, mechanism of lubrication, preparation of petrolubes, desirable characteristics – viscosity, viscosity index, carbon residue, oxidation stability, flash and fire points, cloud and pour points, aniline point. Semisolid lubricant – greases, preparation of sodium, lithium, calcium and axle greases and uses, consistency test and drop point test. Solid lubricants – graphite and molybdenum disulphide.		


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UNIT-V	CHEMICALS AND AUXILIARIES	9
<p>Estimation of available chlorine in hypochlorite bleach liquor. Determination of strength of hydrogen peroxide. Colorants - Theory of colour and constitution: chromophore and auxochrome, bathochromic and hypsochromic shift, classification of dyes based on application and composition. Chemistry of azo dye – synthesis of Methyl red, Methyl orange, Congo red, phenolphthalein, fluorescein and eosin.</p>		

L:45	T: 00	P: 00	Total : 45 Periods
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TEXT BOOKS
<ol style="list-style-type: none"> 1. Dhara S. S., “A Text Book of Engineering Chemistry”, 12th Ed., S. Chand & Co. Ltd., New Delhi, 2016. 2. Jain. P.C. and Monica Jain, “Engineering Chemistry”, Dhanpet Rai& Sons, New Delhi, 17th Edition, 2018. 3. Shikha Agarwal, “Engineering Chemistry-Fundamentals and Applications”, Cambridge University Press, Delhi, 2019.
REFERENCES
<ol style="list-style-type: none"> 1. B.K. Sharma, “Industrial chemistry”, Krishna Prakashan Media (P) Ltd, Meerut, 2014. 2. Shore J., “Colourants and Auxiliaries: 2nd Edition, Volume 1 & 2, Wood head Publishing Ltd., 2002. 3. Shenai V. A., “Chemistry of Dyes and Principles of Dyeing”, Sevak Publications, Mumbai, 1995. 4. Trotman E. R., “Dyeing and Chemical Technology of Textile Fibres”, B.Y Publishing Pvt. Ltd., New Delhi, 1994. 5. Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, “Polymer Science”, New Age International P (Ltd.), Chennai, 2006.

WEB RESOURCES
<ul style="list-style-type: none"> • https://en.wikipedia.org/wiki/Spectroscopy • https://en.wikipedia.org/wiki/Interface_(matter) • https://en.wikipedia.org/wiki/Water_treatment • https://www.ifst.org/resources/information-statements/oils-and-fats
COURSE OUTCOMES
<p>At the end of the course students should be able to:</p> <p>CO1: Understand and apply spectroscopic techniques for the analysis of engineering materials for their end use applications.</p> <p>CO2: Make use of the applications of adsorption in detergency, wetting, spreading, foaming, De - foaming, and water repellence and separation processes.</p> <p>CO3: Analyse the sources of water and it’s impurities, treatment by various techniques.</p> <p>CO4: Analyse and estimate oils, fats, lubricants and soap for their intended applications.</p> <p>CO5: Distinguish and demonstrate the role of different types of chemicals and auxiliaries. Realize the chemical structures, properties and relationships of different types of dyes and their applications.</p>


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24UBE201	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (B.E. Civil, Mechanical & B. Tech. FT)	L	T	P	C
		3	0	0	3

Prerequisites:

Engineering Physics and Mathematics

COURSE OBJECTIVES

- To introduce the basics of electric circuits and analysis
- To impart knowledge of working principles and application of electrical machines
- To introduce analog devices and their characteristics
- To educate on the fundamental concepts of digital electronics
- To introduce the functional elements and working of measuring instruments

UNIT-I	ELECTRICAL CIRCUITS	9
DC Circuits: Circuit Components: Conductor, Resistor, Inductor, Capacitor – Ohm's Law - Kirchhoff's Laws – Simple problems-Nodal Analysis, Mesh analysis Introduction to AC Circuits and Parameters: Waveforms, Average value, RMS Value, Instantaneous power, real power, reactive power and apparent power, power factor.		


UNIT-II	ELECTRICAL MACHINES	9
Construction and Working principle- DC Separately and Self excited Generators, EMF equation, Types and Applications. Working Principle of DC motors, Torque Equation, Types and Applications. Construction, Working principle and Applications of Transformer and Three Phase Induction Motor.		

UNIT-III	ANALOG ELECTRONICS	9
PN Junction Diodes, Zener Diode – Characteristics and Applications – Bipolar Junction Transistor - Types, I-V Characteristics and Applications – Rectifiers.		

UNIT-IV	DIGITAL ELECTRONICS	9
Review of number systems, binary codes, Combinational logic - representation of logic functions-SOP and POS forms, K-map representations - minimization using K maps (4 Variable Problems only) – Multiplexer and Demultiplexer.		

UNIT-V	MEASUREMENTS & INSTRUMENTATION	9
Functional elements of an instrument, Standards and calibration, Operating Principle, types - Moving Coil and Moving Iron meters, Measurement of three phase power, Energy Meter, Instrument Transformers - CT and PT.		

L: 45	T: 00	P: 00	Total: 45 Periods
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TEXT BOOKS

1. Kothari DP and I.J Nagrath, "Basic Electrical and Electronics Engineering", 2nd Edition, McGraw Hill, 2020
2. S.K. Bhattacharya "Basic Electrical and Electronics Engineering", Pearson Education, 2nd Edition, 2017.
3. Sedha R.S., "A text book book of Applied Electronics", S. Chand & Co., 2008
4. James A. Svoboda, Richard C. Dorf, "Dorf's Introduction to Electric Circuits", Wiley, 2018.
5. A.K. Sawhney, Puneet Sawhney 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2015.

REFERENCES

1. Kothari DP and I.J Nagrath, "Basic Electrical Engineering", 4th Edition, McGraw Hill Education, 2019.
2. Thomas L. Floyd, 'Digital Fundamentals', 11th Edition, Pearson Education, 2017.
3. Albert Malvino, David Bates, 'Electronic Principles, McGraw Hill; 7th edition, 2017.
4. Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum' Outline Series, McGraw Hill, 2002.
5. H.S. Kalsi, 'Electronic Instrumentation', Tata McGraw-Hill, New Delhi, 2010

WEB RESOURCES

1. <https://archive.nptel.ac.in/courses/108/105/108105112/>
2. <https://archive.nptel.ac.in/courses/108/101/108101091/>
3. <https://nptel.ac.in/courses/108108076>

COURSE OUTCOMES

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

- CO1: Compute the electric circuit parameters for simple problems.
CO2: Explain the working principle and applications of electrical machines.
CO3: Analyze the characteristics of analog electronic devices.
CO4: Explain the basic concepts of digital electronics.
CO5: Explain the operating principles of measuring instruments.



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24UFT201	FUNDAMENTALS OF FASHION DESIGN	L	T	P	C
		2	0	0	2

Prerequisites:

Nil

COURSE OBJECTIVES

- To introduce briefly the basic concepts of fashion design and portfolio to the students.
- To acquaint the student with the history of fashion, its elements and traditional costumes of various cultures of the world.

UNIT-I	DESIGN CONCEPTS	6
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Design – definition, Design types- natural, stylized, geometric, historic and abstract, garment design- structural, decorative and functional. Elements of Design –line, shape, form, size, colour, texture and pattern. Principles of Design – Harmony, Balance, Rhythm, Emphasis and Proportion. Introducing elements and principles of design in apparels

UNIT-II	COLOUR CONCEPTS	6
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Color – Definition, Dimensions of colour-Hue, Value and Intensity, colour categories and psychology - Warm and Cool Colours, Advancing and Receding colours, Colour theories –Prang colour system and Munsell colour system - colour harmonies.

UNIT-III	FASHION FUNDAMENTALS	6
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Fashion-Definition, Classification of fashion, tangibles and intangibles of fashion, Principles of fashion, Fashion life cycle, Fashion adoption theories. Fashion terminology-Street fashion, Recurring fashion, Mass fashion, Fashion trend, Fashion shows, Style, Chic, Boutique, Haute Couture, Fashion designers – definition, role and study of leading fashion designers - French, Italian, American, Indian and British

UNIT-IV	FASHION DESIGNING PROCESS	6
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Fashion Forecasting – role of forecasting agencies, techniques and presentation of forecast. Design process – Innovation of practice, analyzing the brief, Research inspiration – Research direction, prototyping, planning a collection, designer boards and portfolio presentation

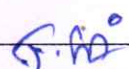
UNIT-V	HISTORIC COSTUMES AND TEXTILES	6
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Origin and importance of clothing, Factors influencing costume changes. Costumes of ancient civilization – Egypt, Greece, Rome, French empires during Renaissance period 1500 - 1600 AD, Traditional costumes of India, China and Japan. Traditional Textiles of India – Dacca Muslin, Jamdhani, Himrus and Amrus, Kashmir.

L: 30	T: 00	P: 00	Total: 30 Periods
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TEXT 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.B Tataporevala Sons and Co. Ltd., 1982.
4. ChuryeG.S, "Indian Costume", Popular Prakashan Pvt. Ltd., Bombay, 1995


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REFERENCES

1. HatanakaKokyo Collection –“Textile arts of India”, Chronide Books, 1996
2. Elaine Stone, Jean A. Samples, “Fashion Merchandising” McGraw-Hill Book Company 1985.
3. RusselGillow and Nicholas Barnard, “Traditional Indian Textiles”, Thames and Hudson Ltd.,London, 1991.
4. Douglas.A. Russel, “Costume History and Style”, Prentice Hall Inc., 1983
5. Elizabeth Rouse, “Understanding Fashion”, Blackwell Scientific Publication, Oxford, 1989. Katherine Morris Lustre, “Historic Costume”, Chas A. Bennett Co., Publishers, Peoria, Illinois, 1956.

WEB RESOURCES

1. https://www.slideshare.net/mohi_t/elements-of-design-14334177
2. <https://www.slideshare.net/admecinstitute/principles-of-design-30520900>
3. <https://www.researchgate.net/publication/215757088>

COURSE OUTCOMES

At the end of the course students should be able to:

CO1: Adapt elements and principles of design in context to textile and apparel.

CO2: Choose suitable color dimensions and schemes for textile and apparel products.

CO3: Understand the principles of fashion, importance of fashion cycle and the role of fashion designers.

CO4: Develop theme boards, create patterns and garment designs based on the inspirations from a theme.

CO5: Identify the traditional world costumes and textiles of India.

T. Suganthi

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24UHS202	TAMILS AND TECHNOLOGY (Common to All Branches)	L	T	P	C
		1	0	0	1

Prerequisites:
Nil

COURSE OBJECTIVES:
<ul style="list-style-type: none"> • Appreciate weaving and ceramic technology. • Learn the design and construction technology of ancient times. • Understand the engineering principles of manufacturing technology. • Introduce the methods of irrigation and agricultural technology. • Learn the scientific tamil and tamil computing.

UNIT I	WEAVING AND CERAMIC TECHNOLOGY	3
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.		


UNIT II	DESIGN AND CONSTRUCTION TECHNOLOGY	3
Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period		

UNIT III	MANUFACTURING TECHNOLOGY	3
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold Coins as source of history - Minting of Coins – Beads making-industries Stone beads - Glass beads - Terracotta beads -Shell beads/ bone beads - Archeological evidences - Gem stone types described in Silappathikaram.		

UNIT IV	AGRICULTURE AND IRRIGATION TECHNOLOGY	3
Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoempu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.		

UNIT V	SCIENTIFIC TAMIL & TAMIL COMPUTING	3
Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.		

L:15	T: 00	P: 00	Total : 15 Periods
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TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலாறு - மக்களும் பண்பாடும் - கே .கே .பிள்ளை (வெளியீடு)
2. தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
3. கணிணித் தமிழ் -முனைவர் இல .சுந்தரம்.(விகடன் பிரசுரம்).
4. கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
5. பொருநை - ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
6. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
7. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
8. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
9. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.) 55
10. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
11. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
12. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
13. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

COURSE OUTCOMES

At the end of the course students should be able to:

- CO1: Explain the principles behind weaving and ceramic technology of ancient tamils.
- CO2: Correlate the present and ancient design and construction technology.
- CO3: Apply engineering principles to ancient manufacturing technology.
- CO4: Apply engineering principles to irrigation and agricultural technology.
- CO5: Develop scientific tamil and new techniques in tamil computing.


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24UHS202	தமிழ்ரும் தொழில்நுட்பமும் (Common to All Branches)	L	T	P	C
		1	0	0	1

அலகு I	தெசவு மற்றும் பாணைத்தொழில்நுட்பம்	3
சங்க காலத்தில் நெசவுத்தொழில்- பாணைத்தொழில் நுட்பம் கருப்பு சிவப்பு பாண்டங்கள் - பாண்டங்களில் கீறல் குறியீடுகள்.		

அலகு II	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்	3
சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம் சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் - சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் கோவில்களும் மாமல்லபுரம் சிற்பங்களும், சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் நாயக்கர் காலக் கோயில்கள் மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் செட்டிநாட்டு வீடுகள் பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ - சாரோசெனிக் கட்டிடக் கலை.		

அலகு III	உற்பத்தி தொழில்நுட்பம்	3
கப்பல் கட்டும் கலை உலோகவியல் - இரும்பு தொழிற்சாலை - இரும்பை உருக்குதல், எஃகு வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் - நாணயங்கள் அச்சடித்தல் மணி உருவாக்கும் தொழிற்சாலைகள் மணிகள் துண்டுகள் - கல்மணிகள், கண்ணாடி சுடுமண் மணிகள் சங்கு மணிகள் எலும்புத் தொல்லியல் சான்றுகள் - சிலப்பதிகாரத்தில் மணிகளின் வகைகள்		

அலகு IV	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்நுட்பம்	3
அணை, ஏரி, குளங்கள், மதகு - சோழர் காலக் குழுவித் தூம்பின் முக்கியத்துவம் கால்நடை பராமரிப்பு கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் - கடல்சார் அறிவு - மீன்வளம் முத்து மற்றும் முத்துக்குளித்தல் -பெருங்கடல் குறித்த பண்டைய அறிவு - அறிவுசார் சமூகம்.		

அலகு V	அறிவியல் தமிழ் மற்றும் கணித்தமிழ்	3
அறிவியல் தமிழின் வளர்ச்சி - கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்கள் மின்பதிப்பு செய்தல் - தமிழ் மென்பொருட்கள் உருவாக்கம் - தமிழ் இணையக் கல்விக்கழகம் - தமிழ் மின் நூலகம் - இணையத்தில் தமிழ் அகராதிகள் சொற்குவைத்திட்டம்		

L:15	T: 00	P: 00	Total : 15 Periods
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TEXT-CUM-REFERENCE BOOKS

- 1) தமிழக வரலாறு - மக்களும் பண்பாடும் - கே .கே .பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
- 2) கணினித் தமிழ் -முனைவர் இல .சுந்தரம்.(விகடன் பிரசுரம்).
- 3) கீழடி - வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- 4) பொருநை - ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை வெளியீடு)
- 5) Social Life of Tamils (Dr.K.K.Pillay) A Joint publication of TNTB & ESC and RMRL - (in print)
- 6) Social Life of the Tamils - The classical Period (Dr.S.Singaravelu) (Published by: International institute of Tamil Studies).
- 7) Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.k.D.Thirunavukkarasu) (Published by:Institute of Tamil Studies).
- 8) The Contribution of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: Institute of Tamil Studies).
- 9) Keeladi - Sangam City Civilization on the banks of banks of river Vaigai' (Jointly Published by: Department of archaeology & Tamil Nadu Text book and Educational Services Corporation, Tamil Nadu)
- 10) Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (published by: The Author).
- 11) Porunai Civilization (jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
- 12) Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) - Reference Book.


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24UGEI201	ENGINEERING GRAPHICS AND DRAFTING (Common to B.E. Civil, ECE, EEE, Mechanical & B. Tech. FT)	L	T	P	C
		3	0	2	4

Prerequisites:

Nil

COURSE OBJECTIVES:

- Drawing engineering curves.
- Drawing freehand sketch of simple objects.
- Drawing orthographic projection of solids and section of solids.
- Drawing development of solids.
- Drawing isometric and perspective projections of simple solids.

UNIT-I	PLANE CURVES AND FREEHAND SKETCHING	6+12
<p>Basic Geometrical constructions, Curves used in engineering practices: Conics — Construction of ellipse, parabola and hyperbola by eccentricity method — Construction of cycloid — construction of involutes of square and circle — Drawing of tangents and normal to the above curves.</p> <p>Visualization concepts and Free Hand sketching: Visualization principles —Representation of Three Dimensional objects — Layout of views- Freehand sketching of multiple views from pictorial views of objects.</p>		

UNIT-II	PROJECTION OF POINTS, LINES AND PLANE SURFACES	6+12
<p>Orthographic projection- principles-Principal planes-First angle projection-projection of points (All Quadrants).</p> <p>Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.</p>		

UNIT-III	PROJECTION OF SOLIDS AND SECTION OF SOLIDS	6+12
<p>Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes and parallel to the other by rotating object method. Solids suspended from corner and real time application of projection of solids.</p> <p>Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other — obtaining true shape of section.</p> <p>Practicing three-dimensional modeling of simple objects by CAD Software.</p>		

UNIT-IV	DEVELOPMENT OF SURFACES	6+12
<p>Development of lateral surfaces of simple and sectioned solids — Prisms, pyramids cylinders and cones. Development of lateral surfaces of simple solids with square and cylindrical cut-outs — Prisms, pyramids cylinders and cones. Practicing three-dimensional modeling of simple objects by CAD Software.</p>		

UNIT-V	ISOMETRIC AND PERSPECTIVE PROJECTIONS	6+12
<p>Principles of isometric projection — Isometric scale - Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions - Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method. Practicing three-dimensional modeling of isometric projection of simple objects by CAD Software. Engineering Applications of isometric, orthographic and perspective projections</p>		

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L: 30	T: 00	P: 60	Total : 90 Periods
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TEXT BOOKS

1. Bhatt N.D. and Panchal V.M., "Engineering Drawing", Charotar Publishing House, 53rd Edition, 2019.
2. Natrajan K.V., "A Text Book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2018.
3. Parthasarathy, N. S. and Vela Murali, "Engineering Drawing", Oxford University Press, 2015

REFERENCES

1. Basant Agarwal and Agarwal C.M., "Engineering Drawing", McGraw Hill, 2nd Edition, 2019.
2. Gopalakrishna K.R., "Engineering Drawing" (Vol. I & II combined), Subhas Publications, Bangalore, 27th Edition, 2017.
3. Luzzader, Warren. J. and Duff, John M., "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi, 2005.
4. Parthasarathy N. S. and Vela Murali, "Engineering Graphics", Oxford University, Press, New Delhi, 2015.
5. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson Education India, 2nd Edition
6. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited 2008, 2nd Edition, 2009.

COURSE OUTCOMES

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

CO1: Use BIS conventions and specifications for engineering drawing.

CO2: Construct the conic curves, involutes and cycloid.

CO3: Solve practical problems involving projection of lines.

CO4: Draw the orthographic, isometric and perspective projections of simple solids.

CO5: Draw the development of simple solids.


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24UGE211	ENGINEERING FUNDAMENTALS LABORATORY (Common to All branches)	L	T	P	C
		0	0	4	2

Prerequisites:

Nil

COURSE OBJECTIVES:

- Drawing pipe line plan; laying and connecting various pipe fittings used in common household plumbing work; sawing; planning; making joints in wood materials used in common household wood work.
- Wiring various electrical joints in common household electrical wire work.
- Welding various joints in steel plates using arc welding work; Machining various simple processes like turning, drilling, tapping in parts; Assembling simple mechanical assembly of common household equipments; Making a tray out of metal sheet using sheet metal work.
- Soldering and testing simple electronic circuits; Assembling and testing simple electronic components on PCB.
- Understand the component parts of computer systems.
- Understand the master programming constructs, and develop, test, and debug programs.
- Identify and analyze problems, and design and implement solutions.

Part – A (Civil and Mechanical)

(Students will be offered any 10 experiments)

1.	Land documents reading and understanding
2.	Material identification and testing as per BIS & NBC
3.	Basic surveying and land area measurement
4.	Water analysis
5.	Basic vastu
6.	Make a Butt/Lap/Tee joint of MS plate using Arc welding and also make Lap joint using riveting
7.	Prepare T/L/Lap joint from the given wooden work piece and make a Box /Tray out of plywood using modern power tools
8.	Perform the simple turning, drilling, tapping using lathe
9.	Demonstration of basic foundry operations
10.	Making a square tray using sheet metal
11.	Study of various metals and alloys
12.	Hands on training to use measuring instruments
13.	Study of 3-D printer / Robotics architecture / Mechatronics system

Part – B (Electrical and Electronics)

Students will be offered any 07 experiments

1.	Study of electrical switches, fuses, indicators, circuit breakers, contactors and relays
2.	Wiring circuit for fluorescent lamp and Stair case wiring
3.	Wiring Circuit of ceiling fan

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4.	Measurement of Earth Resistance
5.	House wiring with energy meter, RCCB and ELCB
6.	Study of electronic components resistor, diode, transistors, measuring devices
7.	Soldering and Assembly of Simple Circuits and trouble shooting
8.	Assembly and dismantle of smart phone
Part- C (Computer Technologies)	
1.	Office automation tools - Word processing
2.	Office automation tools –Spread sheets
3.	Office automation tools - Presentation preparation
4.	Network topology configuration
5.	Network crimping & I/O outlet termination
6.	Types of operating systems and installation

L: 00	T: 00	P: 60	Total :60 Periods
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LIST OF EQUIPMENTS REQUIRED

- Plumbing Equipments
Welding Machine-Set up
Electrical and Electronics Kit
Hardware Requirements
- Standard PC
- Software Requirements
- Windows 7 or higher
 - Python latest version

COURSE OUTCOMES:

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

- CO1: Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
- CO2: Wire various electrical joints in common household electrical wire work.
- CO3: Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
- CO4: Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.
- CO5: Evaluate the performance of different types of CPU scheduling algorithm.
- CO6: Use different systems calls for writing application programs.

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24UFT211	FASHION DESIGNING LABORATORY	L	T	P	C
		0	0	3	1.5

Prerequisites:

Nil

COURSE OBJECTIVES

- To train the students in drawing still objects
- To practice the students to sketch ideal figures
- To educate the students to sketch different poses of human figures
- To practice the students to create garment designs
- To train the students to illustrate fashion figures with styles lines

LIST OF EXPERIMENTS

1. Motif Development – Design Repeat and positioning.
2. Object Drawing and Shading concepts. Drape of fabrics and shading with different mediums.
3. Preparing swatches for dimensions of colour, different colour theories and harmonies.
4. Rendering prints and textures with various fabric constructions (woven, non-woven and knit).
5. Drawing different Silhouettes and garment components - sleeves, collars, necklines, cuffs, skirts, pants.
6. Human Anatomy- Figure basics, Constant proportions, Shapes and parts of human body. Study of different postures- Head- Face, Eyes, Lips, Nose, Hand - Fingers, Leg - Feet and Toes, Hand and Arms.
7. Normal Drawing - Eight head theory. Fashion Figure Drawing - Drawing croqui figures stick, geometric, flesh - 8 ½ and 10 head figures.
8. Different postures of male and female figure - ¾ view, back view, side view. Different poses like – S-Pose, X-Pose, and T-pose.
9. Drawing croqui figures using template, model, imagination and photograph.
10. Create a mood board based on a selected theme; develop garments on croqui figures (Male and female) deriving inspirations from the developed mood board.

L: 00	T: 00	P: 45	Total: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

Fashion Illustration table-15 No.

COURSE OUTCOMES

- At the end of the course students should be able to:
- CO1: Develop motifs, draw objects and shade them.
- CO2: Illustrate fabric drapes and shading with different color mediums.
- CO3: Illustrate different fabric swatches and garment components.
- CO4: Understand human anatomy and illustrate basic figures.
- CO5: Create a mood board based on a selected theme and develop garment designs.


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24UHS211	COMMUNICATION LABORATORY (Common to all Branches)	L	T	P	C
		0	0	4	2

Prerequisites:

- Basic knowledge in language usage

COURSE OBJECTIVES:

- To identify varied group discussion skills and apply them to take part in effective discussions in a professional context.
- To analyse concepts and problems and make effective presentations explaining them clearly and precisely.
- To be able to communicate effectively through formal and informal writing.
- To be able to use appropriate language structures to write emails, reports and essays
- To give instructions and recommendations that are clear and relevant to the context

UNIT-I	MAKING COMPARISONS	12
Speaking-Role Play Exercises Based on Workplace Contexts, - talking about competition discussing progress toward goals-talking about experiences- talking about events in life-discussing past events-Writing: writing emails (formal & semi-formal).		

UNIT-II	EXPRESSING CAUSAL RELATIONS IN SPEAKING AND WRITING	12
Speaking: discussing news stories-talking about frequency-talking about travel problems discussing travel procedures- talking about travel problems- making arrangements-describing arrangements-discussing plans and decisions- discussing purposes and reasons- understanding common technology terms-Writing: - writing different types of emails.		

UNIT-III	PROBLEM SOLVING	12
Speaking: discussing predictions-describing the climate-discussing forecasts and scenarios-talking about purchasing-discussing advantages and disadvantages- making comparisons-discussing likes and dislikes- discussing feelings about experiences-discussing imaginary scenarios Writing: short essays and reports-formal/semi-formal letters.		

UNIT-IV	REPORTING OF EVENTS AND RESEARCH	12
Speaking: discussing the natural environment-describing systems-describing position and movement- explaining rules - (example- discussing rental arrangements) - understanding technical instructions-Writing: writing instructions-writing a short article.		

UNIT-V	THE ABILITY TO PUT IDEAS OR INFORMATION COGENTLY	12
Speaking: describing things relatively-describing clothing-discussing safety issues (making recommendations) talking about electrical devices-describing controlling actions- Writing: job application (Cover letter + Curriculum vitae)-writing recommendations.		

L: 00	T: 00	P: 60	Total : 60 Periods
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WEB RESOURCES

- <https://academicguides.waldenu.edu/writingcenter/grammar/comparisons#:~:text=Adjectives%20and%20adverbs%20can%20be,to%20hedge%20or%20boost%20language.>
- <https://www.linkedin.com/pulse/causality-expressed-natural-language-text-vivek-khetan>
- <https://www.sessionlab.com/blog/problem-solving-techniques/>

COURSE OUTCOMES

At the end of the course students should be able to:

CO1: Speak effectively in group discussions held in formal/semi formal contexts.

CO2: Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions

CO3: Write emails, letters and effective job applications.

CO4: Write critical reports to convey data and information with clarity and precision

CO5: Give appropriate instructions and recommendations for safe execution of tasks


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JAI SHRIRAM ENGINEERING COLLEGE

(An Autonomous Institution)

TIRUPPUR – 638 660

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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR III SEMESTER

24UMA304	PROBABILITY AND STATISTICAL METHODS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- To develop probability techniques in manufacturing and quality evaluation process.
- To familiarize the students with discrete and continuous distributions.
- To familiarize the students with two dimensional random variables.
- To make the students to understand various techniques of correlation and time series analysis.
- To acquaint the student with mathematical tools needed in evaluating statistical quality control and to apply in the textile manufacturing industry.

UNIT-I	PROBABILITY AND RANDOM VARIABLES	9+3
Probability – axioms of probability – Conditional probability – Baye’s theorem – Discrete and continuous random variables – Moments – Moment Generating functions.		

UNIT-II	DISCRETE AND CONTINUOUS DISTRIBUTIONS	9+3
Discrete – Binomial, Poisson, Geometric distributions Continuous-Uniform, Exponential and Normal distributions.		

UNIT-III	TWO DIMENSIONAL RANDOM VARIABLES	9+3
Joint distributions – Marginal distributions and conditional distributions – Moments – Covariance – Transforms of random variables.		

UNIT-IV	CORRELATION, REGRESSION, INDEX NUMBERS AND TIME SERIES ANALYSIS	9+3
Correlation analysis, estimation of regression line. Time series analysis: Variations in time series, trend analysis, cyclical variations, seasonal variations and irregular variations. Index Numbers – Laspeyre’s, Paasche’s and Fisher’s Ideal Index.		

UNIT-V	STATISTICAL QUALITY CONTROL	9+3
Control charts for measurements (\bar{X} and R chart) – Control charts for attributes (p, C and np) charts – Tolerance limits – acceptance Sampling.		

L: 45	T: 15	P: 00	T: 60 Periods
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TEXT BOOKS

1. Johnson, R.A., Miller, I and Freund J., "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2015.
2. Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4th Edition, 2007.
3. Kreyszig, E., "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
4. Grewal. B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 44th Edition, 2018.
5. Richard I. Levin, David S. Rubin, Sanjay Rastogi Masood Husain Siddiqui, Statistics for Management, Pearson Education, 7th Edition, 2016.

REFERENCES

1. Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
2. Papoulis, A. and Unnikrishnapillai, S., "Probability, Random Variables and Stochastic Processes", McGraw Hill Education India, 4th Edition, New Delhi, 2010.
3. Jain. R.K. and Iyengar. S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition, 2016.
4. Ramana. B.V., "Higher Engineering Mathematics", McGraw Hill Education Pvt. Ltd, New Delhi, 2016.
5. Prem. S. Mann, "Introductory Statistics" 7th Edition, Wiley India, 2016.
6. Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, "An Introduction to Statistical Learning with Applications in R", Springer, 2016.

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Use the probability techniques for solving practical problems.

CO2: Apply standard distributions which can describe real life phenomenon.

CO3: Apply two dimensional random variable tools in solving various problems.

CO4: Apply different methods of correlation, regression, index numbers and times series analysis in solving practical problems.

CO5: Apply statistical techniques in solving manufacturing related problems.


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24UFT301	TECHNOLOGY OF SPINNING PROCESSES	L	T	P	C
		2	0	0	2

COURSE OBJECTIVES

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

UNIT-I	YARN SPINNING	10
Linear density systems for textile materials; Objectives, types, working principle of ginning, blow room, carding, drawing machine, roving machine, ring spinning		

UNIT-II	COMBED YARN PRODUCTION PROCESS	4
Comber preparation – objectives, principles of sliver lap ribbon lap and super lap formers; comber–principle of combing, sequence of combing operation		

UNIT-III	OUTLINE & PASSAGE FLOW OF OPEN END SPINNING	6
Principles of yarn formation and material flow – rotor, friction, air-jet, open end and air vortex spinning machines; core, wrap spinning system, comparison of yarn properties.		

UNIT-IV	OUTLINE & PASSAGE FLOW OF SEWING THREAD AND SPECIALITY YARNS	5
Sewing Thread Manufacture: Fibres used and their characteristics. Essential quality requirements of sewing threads, Sequence of manufacturing process for sewing threads for cotton, polyester and polyester / cotton blends. Speciality yarns: Fancy yarns, Textured yarns and Melange yarns-Types and classifications, application. Core spun yarns.		

UNIT-V	OUTLINE & PASSAGE FLOW OF SPECIALITY SPINNING	5
Melt spinning, Dry spinning, Sol gel spinning, Hollow spinning, specialized non-circular cross section fibres, spinning for – nonwovens, Optical fibres, thermotropic liquid-crystal polymers, Electro spinning.		

L: 30	T: 00	P: 00	T: 30 Periods
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TEXT BOOKS

1. Lawrence C.A., "Advances in Yarn Spinning Technology", Woodhead publishing, 2010
2. Klein W., "The Technology of Short-staple Spinning", The Textile Institute, Manchester, 1998
3. Oxtoby E., "Spun Yarn Technology", Butterworth, London, 1987, ISBN: 0408014644/ISBN-13: 9780408014649
4. Bin Ding, Xianfeng Wang and Jianyong Yu, "Electrospinning: Nanofabrication and Applications", Woodhead publishing, 2019

REFERENCES

1. Klein W., "The Rieter Manual of Spinning, Vol.1", Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-1-4 / ISBN 13 978-3-9523173-1-0.
2. Klein W., "The Rieter Manual of Spinning, Vol.2", Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-2-2 / ISBN 13 978-3-9523173-2-7.
3. Klein W., "The Rieter Manual of Spinning, Vol.3", Rieter Machine Works Ltd., Winterthur, 2014, ISBN 10 3-9523173-3-0 / ISBN 13 978-3-9523173-3-4
4. Klein W., and Stalder H., "The Rieter Manual of Spinning", Vol.4, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-4-9 / ISBN: 13 978-3-9523173.
5. Ernst H., "The Rieter Manual of Spinning", Vol.5, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-5-7 / ISBN: 13 978-3-9523173-5-8
6. Stalder H., "The Rieter Manual of Spinning", Vol.6, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-6-5 / ISBN: 13 978-3-9523173-6-5.
7. Thomas Weide, "The Rieter Manual of Spinning", Vol.7, Rieter Machine Works Ltd., Winterthur, 2014, ISBN: 10 3-9523173-7-3 / ISBN: 13 978-3-9523173-7-2.
8. Lord P. R., "Yarn Production: Science, Technology and Economics", The Textile Institute, Manchester, 2003, ISBN: 1855736969 | ISBN-13: 9781855736962
9. Doraiswamy I., Chellamani P., and Pavendhan A., "Cotton Ginning, Textile Progress", The Textile Institute, Manchester, 1993, ISBN: 1870812484 / ISBN: 978-1870812481.
10. Salhotra K. R., and Ishtiaque S. M., "Rotor Spinning; its Advantages", Limitations and Prospects in India, ATIRA, Ahmedabad, 1995
11. Trommer G., "Rotor Spinning", Meliand Textile benchte GmbH, Rohrbacher, 1995, ISBN: 3871505099 | ISBN-13: 9783871505096
12. Lawrence C. A., and Chen K. Z., "Rotor Spinning", Textile Progress, The Textile Institute, Manchester, 1984, ISBN: 0900739681 / ISBN: 978-090073968

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Infer the short staple spinning process and machineries

CO2: Infer the combing process to produce combed cotton yarn

CO3: Outline the process of open-end spinning

CO4: Apply the spinning concepts in fancy yarns and product diversifications

CO5: Outline the process of specialty spinning


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24UFT302	FABRIC MANUFACTURING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To teach preparatory processes, primary, secondary, auxiliary mechanisms and additional mechanisms of shuttle looms; weft insertion principles of shuttle less looms
- To teach knitting process, principles of weft and warp knitting machines
- To teach principles involved in the manufacturing of nonwoven fabric

UNIT-I	BASICS OF WOVEN FABRICS	9
Basics of Woven Fabrics: Different kinds of fabrics, Woven fabrics, Warp, Weft, Weaving; Preparatory processes for single and folded yarn. Yarn Winding Machines: Objectives, yarn passage in Cone Winding machine and Pirn Winding machine. Warping Machines: Objectives, warp passage in Back beam warping machine and Sectional warping machine. Sizing and Gaiting: Objectives of sizing, sizing ingredients and its function; Drawing-in, Denting, and Knotting or Piecing; Gaiting		
UNIT-II	BASIC CONCEPTS OF LOOM	9
Basic Concepts of Loom: Loom, Parts of Loom, Path of Warp in loom; Motions of Weaving – Primary, Secondary, and Auxiliary motions; Types of looms, Loom speed and Efficiency Primary Mechanisms: Basic working principles of Tappet Shedding, Cone over Picking, Cone under Picking, Side lever Under Picking, Crank Beat-up, Timings of Primary Motions; Secondary Mechanisms: Negative Let-off mechanism, Positive Seven wheels Take-up mechanism. Objectives of Auxiliary Motions: Temple, Brake/Starting handle, Warp stop, Warp protecting, Weft stop, Drop box		
UNIT-III	SHEDDING DEVICES	9
Other Shedding Devices: Basic working principles Climax Dobby and Single lift single cylinder; Jacquard, Shuttle less looms: Basic principles of weft insertion by Projectile, Single Rapier, Double Rapier, Air jet, Water jet; Multi-phase weaving; Principles 3D fabric weaving Defects and Inspection: Woven fabric Defects, Causes and Remedies; Fabric inspection, 4-point system, Classification of defects, Inspection procedure		
UNIT-IV	CLASSIFICATION OF KNITTING PROCESSES	9
Classification of knitting processes – weft knit and warp knit; yarn quality requirements for knitting; principles of knitting; types of knitting needles – Bearded, Latch & Compound needle; Weft knitting machines: Principles of Flat knitting machine and Circular knitting machine, Circular bearded needle single-jersey fabric machine, Revolving cylinder latch needle machine, Circular garment length machine.; Warp knitting machines: needle bar, sinker bar, guide bar – pattern wheel – chain link – Warp knitting fundamentals – Knitting cycle for warp knitting – closed lap and open lap stitches – Raschel, compound needle and Tricot knitting machines – Comparison of raschel and tricot knitting machine		
UNIT-V	WEB PREPARATION FOR NONWOVENS	9
Web preparation for nonwovens – Principle, machines, processes for web preparation by dry laid, wet laid and air laid; web preparation by polymeric solution, Spun bonding and Melt Blown process. Bonding of nonwoven: Bonding methods – Principles, machine; processes for mechanical, thermal, chemical bonding; Finishes, Properties and uses of nonwoven fabrics.		

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Talukdar M.K., Sriramulu P.K. and Ajgaonkar D.B., "Weaving: Machines, Mechanisms, Management", Mahajan Publishers, Ahmedabad, 1998, ISBN: 81-85401-16-0
2. Marks R. and Robinson T.C., "Principles of Weaving", The Textile Institute, Manchester, 1989, ISBN: 0 900739 258
3. Abhijit Majumdar, Principles of Woven Fabric Manufacturing 1st Edition, Kindle Edition ISBN-13 978-1498759113
4. Spencer D.J., "Knitting Technology", III Ed., Textile Institute, Manchester, 2001, ISBN: 1855733331.
5. Samuel Raz., "Flat Knitting: The new generation", Meisenbach GmbH, Bamberg, 1997, ISBN: 3- 87525-054-0
6. Samuel Raz., "Warp Knitting production", Melliand Textilberichte, GmbH, Rohrbacher, 1987, ISB: 3-87529-022-4

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1. P.R. Lord and Mohammed., "Weaving: Conversion of yarn to fabric", M.H.Merrine Publishing Co. Ltd., VK, 1998. .
2. W.S. Murphy., "Hand Book of Weaving", Abhishek Publications, 2001
3. Ajgaonkar.D.B., "Knitting technology", Universal Publishing Corporation, Mumbai, 1998, ISBN: 0818502738/ISBN: 9780818502736
4. "Nonwoven Fabrics: Raw Materials, Manufacture, Applications, Characteristics, Testing Processes", Edited by Wilhelm Albrecht, Hilmar Fuchs and Walter Kittelmann, WILEY-VCH Verlag GmbH & Co. KgaA, Weinheim,, ISBN: 3-527-30406-1, 2003

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Describe the objectives and principles of winding, warping machines and the objectives of sizing

CO2: Explain the basic concepts of loom and the working principle of primary, secondary, and auxiliary mechanisms of power loom

CO3: Explain the working principle of dobby, jacquard, and shuttle less looms; Analyze the fabric defects, causes and remedies, procedure for fabric inspection

CO4: Describe the classification of knitted fabrics and explain the working principle of warp and weft knitting machines

CO5: Explain the principles involved in web preparation, bonding and finishing of nonwoven fabrics


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24UFT303	FUNDAMENTALS OF GARMENT MANUFACTURING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To enable the students to learn apparel industry process flow
- To enable the students to learn basic sewing techniques
- To enable the students to understand fundamentals of garment manufacture

UNIT-I APPAREL INDUSTRY PROCESS FLOW

9

Introduction to Indian apparel industry. Structure of an apparel industry – work flow, Pre production planning; types of samples and sample approval; Technical pack, Specification sheet – preparation, analysis and approval. Preparation of proto pattern and developing production pattern

UNIT-II BASIC SEWING TECHNIQUES

9

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

UNIT-III SLEEVES AND COLLARS

9

Sleeves: Types of sleeves, plain, puffs, gathered, bell, bishop, circular, leg-o-mutton, Magyar sleeves dolman, kimono. Method of application. Mounting of sleeve – one piece, two piece.
Collars: Classification – full, flat, roll, partial roll, puritan collar, sailor collar, square collar, rippled collar, scalloped collar, mandarin, convertible, tie, shawl reverse and notch collar.

UNIT-IV YOKE, FULLNESS AND HEMS

9

Yokes: Definition – Selection of yoke design, different styles of yoke. Simple yoke –yokes with or without fullness – midriff yokes, methods of attaching yokes.
Fullness: Definition types, Darts – single, double, pointed darts, tucks, pin tucks, cross tucks, piped tucks, shell tucks, pleats, knife pleats, box pleats, invertible box pleats, kick pleats, flare, godets, gathers, shirrings, single or double frills, Ruffles.
Hemming Techniques: Definition, factors to be considered in the selection of hems, types of machine stitched hem, hand stitched hem.

UNIT-V PLACKETS AND POCKETS

9

Plackets: Types, regular, top stitched with edge stitch, top stitched with one leg of pressure foot distance, concealed plackets, kurta plackets. Sleeve packet: faced placket, continuous bound placket and diamond placket.
Pockets: Types – patch pocket, patch with lining / flap, front hip, set-in seam, slash pocket with flap-single lip, double lip.
Waist Band: One piece, two piece and tailor waist band, elastic applied.
Cuffs: Types, square shape, round shape.

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

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

REFERENCES

1. Richard M. Jones., “The Apparel Industry”, Blackwell Science, U.K., 2006, ISBN: 1405135999 | ISBN-13: 9781405135993.
2. Kantilal Ila., “Apparel Industry in India”, NICTAS Publication, Ahmedabad, 1990, ISBN: 8185472009 | ISBN-13: 9788185472003.
3. Rajkishore Nayak., and Rajiv Pandhya., “Garment Manufacturing Technology”, Woodhead publications 2015, ISBN: 1782422323 | ISBN-13: 9781782422327.
4. ChutterA. J., “Introduction to Clothing Production Management”, Wiley-Blackwell Science, U.K., 1995, ISBN: 0632039396 | ISBN-13: 9780632039395.
5. Harold Carr, “The Clothing Factory”, Clothing and Footwear Institute, 1972, ISBN: B0012PP566.

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Outline the structure of apparel industry

CO2: Classify the types of stitches, seams and sewing threads

CO3: Develop different types of sleeves and collars

CO4: Construct yoke, fullness and hems

CO5: Select suitable plackets and pockets for garments


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24UFTI301	TEXTILE FIBRE SCIENCE AND CHARACTERISTICS	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES

- To enable the students to learn about the types of fibre and its properties
- To enable the students to understand the physical characteristics of textile fibres
- To enable the students to understand identification of textile fibres

UNIT-I	INTRODUCTION TO TEXTILE FIBRES	9
Definition of various forms of textile fibres – staple fibre, filament, bi-component fibres. Classification of Natural and Man-made fibres, essential and desirable properties of fibres. Introduction to fibre linear density and strength – units of measurements. Production and cultivation of Natural Fibres: Cotton, Silk, Wool, Flax, Jute – Physical and chemical structure of the above fibres, Sustainable fibres.		

UNIT-II	MANUFACTURED FIBRES	9
Production Sequence of Regenerated Cellulosic fibres: Viscose Rayon, Acetate rayon – High wet modulus fibres: Modal and Lyocel – Production Sequence of Synthetic Fibres: Polyester, Nylon and Acrylic. Introduction to spin finishes and texturisation		

UNIT-III	BASIC FIBRE PROPERTIES	9
Physical (Tensile, Moisture, Density), Chemical, Biological, Thermal and Optical Properties of the above natural and manufactured fibres.		

UNIT-IV	SPECIALITY FIBRES	9
Properties and end uses of high tenacity and high modulus fibres, high temperature and flame retardant fibres, elastomeric fibres, PLA fibre, ultra-fine fibres, nano-fibres, metallic fibres – Gold and Silver coated; Super-absorbent fibres for medical and hygiene applications.		

UNIT-V	CHARACTERISATION OF TEXTILE FIBRES	9
Appearance (Microscopic view, Color), Solubility, density and burning tests.		

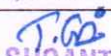
L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Mishra S.P., "Fibre Science & Technology", New Age International Publishers, 2000
2. Morton, W.E and Hearle, J.W.S., "Physical Properties of Textile Fibres", The Textile Institute, Manchester, U.K., 1993

REFERENCES

1. Muthopadhyay.S.K., "Advances in Fibre Science", The Textile Institute, UK 1992
2. Collier. B and Tortora.P., "Understanding Textiles", 6th Edition, Prentice Hall, 2001
3. Gupta.V.B., "Textile Fibres: Developments and Innovations", Vol. 2, Progress in Textiles: Science & Technology, Edited by V.K. Kothari, IAFL Publications, 2000
4. Corbman.B.P., "Textiles: Fibre to Fabric", McGraw Hill International Edition, 1983


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LIST OF EXPERIMENTS

1. Study of longitudinal view of natural and synthetic fibres
2. Determination of fineness of fibre
3. Determination of fibre strength and elongation
4. Determination of fibre length
5. Identification of fibres
6. Determination of blend proportion of blends

L: 00	T: 00	P: 30	T: 30 Periods
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LIST OF EQUIPMENTS REQUIRED

Microscope
Fibre bundle strength tester
Fibre fineness tester
Fibre length tester

COURSE OUTCOMES

At the end of the course students should be able to

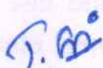
CO1: Explain the process sequence of various natural fibres

CO2: Discuss the process sequence of various synthetic fibres

CO3: Classify the basic fibre properties

CO4: Analyze the properties and end uses of speciality fibres

CO5: Identify the different tests used to identify the textile fibres


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24UFTI302	PATTERN ENGINEERING	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES

- To enhance the fundamental knowledge in human anthropometrics from the scientific and technological viewpoint
- To equip students with comprehensive pattern making skills
- To equip students in pattern alterations and grading

UNIT-I	STUDY OF BODY MEASUREMENTS AND SIZING SYSTEMS	9
Anthropometry – Human Anatomy, Body Ideals – Eight head theory: body proportions, height and weight distribution. Important body measurements for children, men and women across all age groups – Clothing sizing systems – Preparing and Measuring the Form, Methods of measuring body dimensions, Standard measurement chart – designation and control dimensions. Landmark terms		

UNIT-II	BASICS OF PATTERN MAKING	9
Introduction to pattern making and methods. Functions of pattern making tools, Pattern making terminologies, Development of pattern – Drafting and draping methods – Basic men’s block – bodice, sleeves, trousers, and women’s block – bodice, sleeves, trousers, skirt		

UNIT-III	PATTERN ALTERATIONS AND GRADING	9
Pattern alteration for fit women, men and children, Factors affecting the pattern making process. Grading process, grade rules and types of grading system		

UNIT-IV	TECHNIQUES OF PATTERN MAKING	9
Dart manipulation – Single dart series – slash and spread technique, pivotal transfer technique. Two dart series – slash spread and pivotal transfer technique. Graduated and radiating darts. Parallel, asymmetric and intersecting darts. Types of added fullness and Contouring Principle		

UNIT-V	PATTERNS FOR COLLARS AND SLEEVES	9
Collar classification and terms, basic shirt collar, Peter pan collar, sailor collar, mandarin collar, built-up neck lines, cowls, sleeve cap, sleeve cuff, puff, petal, lantern and leg-o-mutton sleeves		

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Harrold Carr., and Barbara Latham., “The Technology of Clothing Manufacture”, Blackwell Science, U.K., 1994, ISBN: 0632037482 | ISBN-13: 9780632037483
2. Helen Joseph Armstrong, “Pattern Making for Fashion Design” Pearson Education (Singapore) Pvt. Ltd., 2005
3. Winifred Aldrich, “Metric Pattern Cutting” Blackwell Science Ltd., 1994


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REFERENCES

1. Gerry Cooklin, "Master Patterns and Grading for Women's Outsizes", Blackwell Scientific Publications, 1995
2. Gerry Cooklin, "Master Patterns and Grading for Men's Outsize", Blackwell Scientific Publications, 1992
3. Jeenne Price and Bernard Zamkoff, "Grading Techniques for Modern Design" Fairchild Publications, 1990
4. Amaden-Crawford Connie, "The Art of Fashion Draping (3rd edition)" Om Books International Publications, 2005

LIST OF EXPERIMENTS

1. Measuring the dress form kid, male and female
2. Drafting and grading the basic bodice and sleeve
3. Drafting and grading of basic skirt
4. Drafting and grading of basic trouser
5. Techniques of pattern making (slash and spread, pivoted technique)
6. Developing basic patterns using draping methods – Bodice
7. Developing patterns using draping methods – Skirt
8. Drafting of shirt collar and puff sleeve

L: 00	T: 00	P: 30	Total: 30 Periods
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LIST OF EQUIPMENTS REQUIRED

Dress form kid, male and female
Pattern making tools – Rulers and curves

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Categorize anthropometry concepts and important body measurements

CO2: Prepare patterns for basic blocks using drafting and draping techniques

CO3: Develop grading and make pattern alteration

CO4: Apply dart manipulation techniques to design and make variation in garment components

CO5: Draft patterns for different styles of collars and sleeves


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24UFT311	COMPUTER AIDED FASHION DESIGNING LABORATORY	L	T	P	C
		0	0	3	1.5

Prerequisites:
Fashion Designing Laboratory

COURSE OBJECTIVES
<ul style="list-style-type: none"> To train the students in CAD for designing of motifs To train the students in CAD for designing of fabrics To train the students in CAD for designing of garments

LIST OF EXPERIMENTS
<ol style="list-style-type: none"> 1. Introduction to tools and workspace of image editing software and vector software 2. Development of motifs suitable for printed textile and woven textile 3. Development of woven fabrics designs – plain, twill, satin and denim 4. Development of technical diagrams – T-shirt and trousers 5. Illustration of kid's romper (all over print) 6. Illustration of kid's frock (lace) 7. Illustration of men's T-shirt with a chest print design 8. Illustration of men's basic formal shirt (checks and plaids) 9. Illustration of men's basic trouser (solid combos) 10. Illustration of women's long dress (all over print) 11. Illustration of children's school uniform 12. Illustration of women's maternity wear with functionality

L: 00	T: 00	P: 45	Total: 45 Periods
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LIST OF EQUIPMENTS REQUIRED
Any designing software

COURSE OUTCOMES
At the end of the course students should be able to
CO1: Illustrate textile print design
CO2: Develop various fabric design
CO3: Design flat sketch for kid's garments
CO4: Perform design for men's and women's garments
CO5: Illustrate different functional garments


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24UFT312	GARMENT COMPONENTS CONSTRUCTION LABORATORY	L	T	P	C
		0	0	3	1.5

COURSE OBJECTIVES

- To train the students in fundamentals of seams
- To train the students in fundamentals of component parts
- To train the students in fundamentals of fullness

LIST OF EXPERIMENTS

1. Preparing samples for Seams and Stitches – Plain, top stitch, lapped, slot, french, piped and even basting, un even basting, running, back, overcasting, hemming
2. Preparing samples for Fullness – Darts, Tucks
3. Preparing samples for Fullness – Pleats, Gathers
4. Preparing samples for Fullness – Flares, Godets, Frills, Ruffles
5. Preparing samples for Necklines – Bias facing, Bias Binding and Fitted facing
6. Preparing samples for Sleeves – Plain, Puff at Both Sides, Raglan, Kimono
7. Preparing samples for Collars – Peter Pan Collar, Full Shirt Collar, Shawl Collar
8. Preparing samples for Pockets – Patch Pocket, Bound Pocket and Front Hip Pocket
9. Preparing samples for Plackets – Continuous Bound Placket, Two Piece Placket
10. Preparing samples for Plackets – Tailors Placket, Fly Opening with Zipper

L: 00	T: 00	P: 45	T: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

SNLS Machine

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Prepare samples for seams and stitches

CO2: Develop samples for fullness

CO3: Construct samples for necklines and sleeves

CO4: Prepare samples for collars and pockets

CO5: Develop samples for plackets


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24UFT313	PROFESSIONAL DEVELOPMENT	L	T	P	C
		0	0	2	1

COURSE OBJECTIVES

- To be proficient in using MS WORD to create quality technical documents by using variety of features to enhance the presentability and overall utility value of content.
- To be proficient in using MS EXCEL for all data manipulation tasks including the common statistical, logical, mathematical etc., operations, conversion, analytics, search and explore, visualize, interlink, and utilizing many more critical features offered
- To be able to create and share quality presentations by using the features of MS PowerPoint, including: organization of content, presentability, aesthetics, using media elements and enhance the overall quality of presentations.

LIST OF EXPERIMENTS

MS WORD:

10 Hours

Create and format a document
 Working with tables
 Working with Bullets and Lists
 Working with styles, shapes, smart art, charts
 Inserting objects, charts and importing objects from other office tools
 Creating and Using document templates
 Inserting equations, symbols and special characters
 Working with Table of contents and References, citations
 Insert and review comments
 Create bookmarks, hyperlinks, endnotes footnote
 Viewing document in different modes
 Working with document protection and security
 Inspect document for accessibility

MS EXCEL:

10 Hours

Create worksheets, insert and format data
 Work with different types of data: text, currency, date, numeric etc.
 Split, validate, consolidate, Convert data
 Sort and filter data
 Perform calculations and use functions: (Statistical, Logical, Mathematical, date, Time etc.,)
 Work with Lookup and reference formulae
 Create and Work with different types of charts
 Use pivot tables to summarize and analyse data
 Perform data analysis using own formulae and functions
 Combine data from multiple worksheets using own formulae and built-in functions to generate results
 Export data and sheets to other file formats
 Working with macros
 Protecting data and Securing the workbook

MS POWERPOINT:

10 Hours

Select slide templates, layout and themes
 Formatting slide content and using bullets and numbering
 Insert and format images, smart art, tables, charts
 Using Slide master, notes and handout master
 Working with animation and transitions
 Organize and Group slides
 Import or create and use media objects: audio, video, animation


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Perform slideshow recording and Record narration and create presentable videos

L: 00 T: 00 P: 30 T: 30 Periods

LIST OF EQUIPMENTS REQUIRED

Computer

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Create quality documents, by structuring and organizing content for their day to day technical and academic requirements

CO2: Perform data operations and analytics

CO3: Retrieve data as per requirements and visualize data for ease of understanding

CO4: Create academic presentations

CO5: Create high quality presentations by including common tables, charts, graphs, interlinking other elements, and using media objects


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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR IV SEMESTER

24UFT401	APPAREL MACHINERIES AND EQUIPMENT	L	T	P	C
		3	0	0	3

Prerequisites:

Fundamentals of Garment Manufacturing

COURSE OBJECTIVES

- To impart knowledge on the machineries and equipments used for spreading and cutting
- To impart knowledge on the functions of sewing machines
- To impart knowledge on the latest developments in the garment production machineries

UNIT-I SPREADING MACHINES

9

Types of Fabric Packages. Types of Fabrics – One Way – Two Way Fabrics – Their effect on spreading. Methods of Fabric spreading. Spreading equipments – Computerized spreaders. Marker planning, Marker efficiency, Factors affecting marker efficiency. Marker duplicating methods – Computer aided marker making.

UNIT-II CUTTING MACHINES

9

Introduction to cutting machines. Types and functions of cutting machines – Straight knife, round knife, band knife cutting machines. Notches, drills, die cutting machines. Computerized cutting machines. Maintenance of cutting machines. Common defects in cutting and their remedies. Latest Developments.

UNIT-III SEWING MACHINES SNLS

9

Basic parts of sewing machine – primary and auxiliary parts and their functions. Bobbin case/Bobbin hook, Throat plate – Takeup devices – Tensioners – Feed dog – Pressure foot. Types of needles – Parts of needles and their function. Needle finishes. Adjustments of Stand height – pedal – Needle Bar – Stitch length selection – Feed timing – Needle and Bobbin Thread Tension – Stitch cycle timing diagram. Common defects and remedies. Special attachments in sewing machines – guides, folders, stackers, trimmers, ziggers.

UNIT-IV MULTI THREAD SEWING MACHINES

9

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

UNIT-V SPECIAL PURPOSE SEWING MACHINES

9

Introduction to different special purpose sewing machines. Basic working of Feed of Arm, Button Hole sewing, button sewing, Bar tack, blind stitch machines. Embroidery sewing machines. Latest developments in sewing machines. Sewing machine maintenance – Maintenance schedule for various machines. Maintenance audit.


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TEXT BOOKS

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

REFERENCES

1. Laing R.M., Webster J, "Stitches & Seams", The Textile Institute, India, 1998
3. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001
4. Singer, "Sewing Lingerie", Cy De Cosse Incorporated, 1991
5. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998

COURSE OUTCOMES

At the end of the course students should be able to

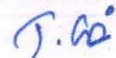
CO1: Understand the different types of fabric laying methods, spreading machines and its control methods

CO2: Explain the different types of cutting machines and its control methods

CO3: Analyse the sewing machine and its basic parts, functions and its safety measures

CO4: Analyse the different types of multi thread sewing machines and its purpose

CO5: Discuss the special sewing machines, its purpose and control measures



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24UFT402	FABRIC STRUCTURES	L	T	P	C
		3	0	0	3

Prerequisites:

Fabric Manufacturing

COURSE OBJECTIVES

- To learn the structures of basic, simple and compound weaves
- To learn the structures of pile and leno structures; graphing for spot and jacquard figuring
- To learn the different weft knit and warp knit structures

UNIT-I	BASIC WEAVES	9
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Basic Weaves: Plain-Warp Rib, Weft Rib, Mat; Twill, Sateen – Draft and peg-plan of these weaves; Simple Weaves: Wavy Twill, Herring Bone, Diamond, Diaper; Ordinary Honey comb, Brighton Honey comb, Mock-leno, Huck-a-back, Crepe; Draft and peg-plan of basic and simple weaves

UNIT-II	ADVANCED WEAVES	9
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Compound Weaves: Basic construction of – Plain face Bedford cord, Plain face welt, Twill face Warp Backed, Weft Backed structures; Plain face Extra Warp, Extra Weft structures produced by heald; Twill face self-stitched Double Cloth, Interchanging plain double cloth

UNIT-III	PILE AND JACQUARD WEAVES	9
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Pile Weaves and Leno: Basic construction of – Warp pile – Velvet, Terry Pile; Weft Pile – Velveteen and Corduroy; Dobby and Jacquard Design: Spot Figure graphing, Steps involved in graphing for figured fabrics, Basics of computer Aided Graph Designing. Characteristics, Commercial names and end uses of the fabrics woven with different weaves of the course.

UNIT-IV	WEFT KNIT STRUCTURES	9
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Weft knit structures: Representation and characteristics of weft knit fabric structures – Single jersey, Rib, Purl, and Interlock. Derivatives of single and double jersey structures: Accordion type of fabrics, plaited fabrics, 2X2 rib structure, half cardigan, full cardigan, eight lock, Ponte-di-Roma, Ottoman rib, Bourrelet, Texi- pique, Pin-tuck, Milano rib, French pique, Swiss pique.

UNIT-V	WARP KNIT STRUCTURES	9
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Warp knit structures: Representation and characteristics of warp knit fabric structures. Point Paper, Chain-Link Notation, single fabrics, Atlas fabrics, Chain stitch, Tricot lap, Full tricot, Lock Knit, Reverse Lock Knit, satin, Loop raided fabrics, Queen's cord, Sharkskin, Blind lap, open work effects, Marquissette, sand-flair net, Hexagonal net. Characteristics, Commercial names and end uses of the fabrics/garments with different weft and warp knit structures

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Grosicki.Z.J., "Watson's Textile Design and Color", Vol.1, Wood head Publications, Cambridge England, 2004, ISBN: 9781782420088
2. Grosicki.Z.J., "Watson's Advanced Textile Design and Color", Vol.II, Butterworths, London, 1989, ISBN: 9781845698522
3. Spencer.D.J., "Knitting Technology: A Comprehensive Handbook and Practical Guide", Woodhead Publishing Series in Textiles, 2001, ISBN 1855 733331
4. Anbumani.N, "Knitting Fundamentals", New Age International Publisher, 2007, ISBN: 8122419542

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1. W.S. Murphy, "Textile weaving and Design", Abhishek Publications, 2007, ISBN: 9788182471664
2. H. Nisbet, "Grammar of Textile Design", Taraporewala and Sons Co. Pvt. Ltd., 1994, ISBN: 1362902470
3. Wilson J., "Handbook of Textile Design", Textile Institute, Manchester, 2001, ISBN: 9781855735736
4. Seyam A. M., "Structural Design of Woven Fabrics, Theory and Practice", Textile Institute, Manchester, 2002, ISBN: 1870372395
5. Georner D, "Woven Structure and Design, part 1: Single Cloth Construction", WIRA, U.K., 1986, ISBN: 0900820179
6. Georner D, "Woven Structure and Design, Part 2: Compound Structures", WIRA, U.K.,1989, ISBN: 090366951X
7. Gokarneshan N., "Fabric Structure and Design", New Age International (P) Limited, 2009, ISBN: 812241530X
8. Sadhan C. Ray, "Fundamentals and Advances in Knitting Technology", Woodhead Publishing India in Textiles, 2015, e book ISBN: 9780429083815

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Design and describe the construction of basic weaves and simple weaves

CO2: Design and describe the construction of compound weaves

CO3: Design and describe the construction of pile weaves, jacquard designs, and define the commercial names of woven fabrics

CO4: Design and describe the weft knit structures

CO5: Design and describe the warp knit structures and define the commercial names of knitted fabrics


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24UFT403	APPAREL MANUFACTURING TECHNOLOGY	L	T	P	C
		3	0	0	3

Prerequisites:

Fundamentals of Garment Construction

COURSE OBJECTIVES

- To know production system for apparel industry based on style and quantity of merchandise
- To learn the suitable cut production analysis for various garment quantities
- To update modern tools and methods of production planning and control

UNIT-I	PRODUCTION PLANNING AND CONTROL	9
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Definition, Objectives and functions of production planning and production control, Functions of PPC in garment Industry. Pre-production functions, Importance of Preproduction function, Product development – steps from prototype to production sample. Lead Time, Product data management, Order quantity to shipment quantity.

UNIT-II	PLANNING IN CUTTING	9
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Cut order planning – types of spreads, spreading methods, marker utilization, economic cut quantities. Control forms in cutting department – cutting order, bundle ticket, bundle control sheet.

UNIT-III	FLOW PROCESS GRIDS AND CHARTS	9
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Operation break down and production sequence, Identification of bottle necks and critical area, Operation wise machinery allocation, Usage of special attachments and tools for operation simplifications, Production grid and flow chart.

UNIT-IV	PRINCIPLES OF SCHEDULING AND LINE BALANCING	9
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Scheduling charts – GANTT chart, Scheduling techniques Network representation – CPM and PERT Time & Action calendar. Determination and allocation of manpower and machines for balanced production in existing plant for a given target, application of line balancing techniques – balance control.

UNIT-V	PLANT LOADING, CAPACITY PLANNING AND PRODUCTION CONTROL	9
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Production line loading planning, Factory Capacity planning, Determination of machine requirements for a new factory – calculation of labor requirements, Linear programming. Production control forms, Modern Methods in Cut Piece Distribution and Tracking in different Manufacturing Systems, Production planning softwares.

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Garg R. K, and Sharma V., "Production Planning and Control Management", Dhanpat Rai Publishing, 2003
2. Jacob Solinger,, "Apparel Production Handbook", Reinhold Publications, 1998
3. Telsang (Martand)., "Industrial Engineering and Production Management" S.Chand & Company Limited, 2008

REFERENCES

1. Rajesh Bheda., "Managing Productivity of Apparel Industry" CBI publishers and distributors, NewDelhi, 2002
2. David J Tyler, "Material Management in Clothing Production", Prentice Hall, New jersey, 1991
3. Churter, A.J., "Introduction to Clothing Production Management", Oseney Mead,2001
- 4.Carr Harold., Latham Barbara , "The Technology of Clothing Manufacture", Om Book Service, 2004

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Explain the basic techniques of production planning and control in garment industry

CO2: Prepare and analyze the flow process grids, control forms and scheduling charts for production control in apparel industry

CO3: Plan the suitable cut production analysis for various garment quantities

CO4: Determine the capacity planning and line balancing techniques to achieve balanced production

CO5: Update modern tools and methods of production planning and control


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24UFT404	GARMENT CONSTRUCTION	L	T	P	C
		3	0	0	3

Prerequisites:

Fundamentals of Garment Manufacturing, Pattern Engineering

COURSE OBJECTIVES

- To impart knowledge on drafting of garment components
- To impart knowledge on construction of garment components
- To impart knowledge on drafting and construction of men's, women's and children's wear

UNIT-I	PATTERN AND CONSTRUCTION OF GARMENT COMPONENTS	9
Classification of stitches and seams-Applications. Pocket classification, outside pockets, inserted pocket and side-seam pocket. Pointed, Slit opening and Wing collar plackets, waist band, pleats, flares, gathers, Facing patterns for cutout necklines and armholes.		

UNIT-II	PATTERN AND CONSTRUCTION OF CHILDREN'S WEAR	9
Fabric selection, drafting procedure, operation breakdown of garment assembly – Kids top and bottom apparel wears, rompers, creeper, and jumpsuit		

UNIT-III	PATTERN AND CONSTRUCTION OF MEN'S WEAR	9
Fabric selection, drafting procedure, operation breakdown of garment assembly – Shirt, T-shirt, Pant derivatives, Jean, Jacket, Inner wear – Vests, Briefs		

UNIT-IV	PATTERN AND CONSTRUCTION OF WOMEN'S TOPS	9
Fabric selection, drafting procedure, operation breakdown of garment assembly – Kimono, raglan foundation, princess line foundation, bias cut dresses, tunic, tank tops, sports top's, capri		

UNIT-V	PATTERN AND CONSTRUCTION OF WOMEN'S BOTTOMS AND INTIMATE APPAREL	9
Fabric selection, drafting procedure, operation breakdown of garment assembly – Trousers variations, skirt variations, leggings, panties, brassier and camisoles, petticoat		

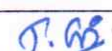
L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications, 1998
2. Helen Joseph Armstrong, "Pattern Making for Fashion Design" Pearson Education (Singapore) Pvt. Ltd., 2005
3. Winifred Aldrich, "Metric Pattern Cutting" Blackwell Science Ltd., 1994

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1. Gerry Cooklin, "Master Patterns and Grading for Women's Outsized", Blackwell Scientific Publications, 1995
2. Gerry Cooklin, "Master Patterns and Grading for Men's Outsize", Blackwell Scientific


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Publications, 1992.

3. Laing R.M., Webster J, "Stitches & Seams", The Textile Institute, India, 1998

4. Shaeffer Claire, "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001

5. Singer, "Sewing Lingerie", Cy De Cosse Incorporated, 1991.

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Prepare patterns and construct garment components

CO2: Draft patterns and construct for kid's wear

CO3: Prepare patterns and construct for men's wear

CO4: Draft patterns and construct for women's wear

CO5: Develop patterns and construct for intimate apparel

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24UFTI401	FABRIC AND GARMENT QUALITY EVALUATION	L	T	P	C
		3	0	2	4

Prerequisites:

Probability and Statistical Methods

COURSE OBJECTIVES

- To impart knowledge on construction characteristics and sampling techniques
- To impart knowledge on quality fabric evaluation of garments
- To impart knowledge on quality evaluation of garments

UNIT-I	CONSTRUCTION CHARACTERISTICS & SAMPLING TECHNIQUES	9
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Basic fabric particulars – Measurement of ends and picks per inch, count of warp and weft, thickness and areal density (GSM), moisture regain and moisture content, warp and weft crimp; cover factor calculation; Fabric sampling techniques: Definition – random, biased sampling. Terms used in sampling. Sampling techniques for fabric. Standard conditions for testing samples.

UNIT-II	MECHANICAL PROPERTIES	5
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Tensile strength measurement – ravelled strip test and grab test – mechanical and electronic measuring systems. Tear strength – importance – measuring systems. Bursting strength and its measurement. Ballistic impact strength, Universal tensile tester; standards.

UNIT-III	SURFACE AND AESTHETIC PROPERTIES	13
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Fabric stiffness – principle of measurement of flexural rigidity; Drape ability – measurement of drape coefficient; Crease recovery measurement techniques. Wrinkle recovery assessment using standard grades; Principle and functioning of air permeability testers, water repellency, contact angle, fabric abrasion and pilling tester and fabric shrinkage testing; standards and norms. Color fastness testing – Washing, Rubbing, Light, Perspiration fastness.

UNIT-IV	LOW STRESS CHARACTERISTICS	9
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Low stress mechanical properties – Kawabata Evaluation System; FAST; Fabric bending, Shear compression and decompression; surface roughness and friction tensile behaviour.

UNIT-V	FABRIC AND GARMENT INSPECTION	9
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Fabric inspection – 4-point system, 10-point system, classification of fabric defects, independent product quality certification, Acceptable Quality Level (AQL), Seam strength and seam slippage testing. Peel bond strength testing; Button, Zipper strength testing, Apparel dimensional stability – spirality. Inspection of garments and garment defects – sewing, pressing, finishing and packaging defects.

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Booth J.E., "Principle of Textile Testing", Butterworth Publications, London, 1989
2. Kothari V. K., "Testing and Quality Management", Progress in Textile Technology Vol.1, IAFL Publications, New Delhi, 1999
3. Sara J. Kadolph., "Quality Assurance for Textiles and Apparels", Fair Child Publications, New York, 1998
4. Apurba Das., and Alagirusamy R., "Science in clothing comfort", Woodhead Publishing India Pvt. Ltd., India, 2010, ISBN: 1845697898 | ISBN-13: 9781845697891

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

LIST OF EXPERIMENTS:

- Determination of
1. Yarn count and lea strength
 2. Yarn twist
 3. Yarn appearance grade
 4. Fabric abrasion resistance
 5. Fabric pilling
 6. Fabric tensile strength
 7. Fabric stiffness
 8. Fabric crease recovery angle
 9. Fabric bursting strength
 10. Fabric drape
 11. Fabric tear strength
 12. Fabric air permeability
 13. Seam strength and zipper strength
 14. Button pull strength

L: 00	T: 00	P: 30	T: 30 Periods
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LIST OF EQUIPMENTS REQUIRED

Wrap Reel
Wrap Block
Yarn Twist Tester
Single Yarn Strength Tester
Bundle yarn strength tester
Weighing balance
Yarn appearance Board Winder
Yarn appearance Board (Standards)
Fabric tensile strength tester
Fabric tearing strength tester
Fabric thickness tester
Fabric stiffness tester
Fabric crease recovery tester
Fabric bursting strength tester
Fabric abrasion resistance tester
Fabric pilling resistance tester
Fabric air permeability tester
Fabric drape meter

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Use the sampling methods and identify the construction characteristics

CO2: Determine the mechanical characteristics

CO3: Evaluate the serviceable properties

CO4: Analyze the low stress mechanical characteristics

CO5: Perform fabric and garment inspection


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24UFT411	FABRIC STRUCTURE LABORATORY	L	T	P	C
		0	0	3	1.5

COURSE OBJECTIVES

- To train the students in analyzing the cloth to identify construction parameters
- To learn the different structures of woven, and knitted fabrics
- To learn the different structures of non-woven fabrics

LIST OF EXPERIMENTS

1. Plain and its derivatives
2. Twill and its derivatives
3. Satin and Sateen (Regular and irregular)
4. Honeycomb (Ordinary and Brighton)
5. Huck-a-back and Mock-lenø
6. Extra warp and extra weft figuring
7. Pile fabrics (warp and weft)
8. Bedford cord and Backed fabrics
9. Double cloth
10. Crepe
11. Basic Weft knitted structures
12. Basic Warp knitted structure
13. Basic non-woven structures

L: 00	T: 00	P: 45	T: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

Pick glass
 GSM cutter
 Beesley balance
 Crimp tester
 Electronic balance

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Identify the constructional parameters of woven fabric

CO2: Design, draft and peg plan for woven fabrics

CO3: Analyze the construction of weft and warp knitted structures

CO4: Examine the structure of nonwoven fabrics

CO5: Evaluate of the non-woven structures


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24UFT412	GARMENT CONSTRUCTION LABORATORY I	L	T	P	C
		0	0	3	1.5

Prerequisites:

Fundamentals of Garment Manufacturing

COURSE OBJECTIVES

- To train the students in designing and development of kid's and women's wear
- To train the students in garment construction
- To learn basic sewing machine parts and its functions

LIST OF EXPERIMENTS

1. Designing and developing pattern for baby set – Jabla, panty, bib and bonnet.
2. Construction of baby set – Jabla, panty, bib and bonnet
3. Designing and developing pattern for rompers
4. Construction of rompers
5. Designing and developing pattern for ladies skirt and top
6. Construction of ladies skirt and top
7. Designing and developing pattern for ladies salwar
8. Construction of ladies salwar
9. Designing and developing pattern for ladies kameez
10. Study of over lock and flatlock machines
11. Study of SNLS and zig-zag embroidery machines

L: 00	T: 00	P: 45	T: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

Single needle lock stitch machine
 Flat lock machine
 Feed -of- the arm machine
 Over lock machine
 Button holing and button attachment machine

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Design and develop patterns for basic kid's garment

CO2: Draft and develop patterns for basic women's garment

CO3: Develop samples for basic kid's wear

CO4: Develop samples for women's wear

CO5: Analyze the parts and functions of single needle and multi thread sewing machines


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TIRUPPUR – 638 660

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REGULATIONS 2024

B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR V SEMESTER

24UFT501	APPAREL PRODUCTION PLANNING AND PROCESS CONTROL	L	T	P	C
		3	0	0	3

Prerequisites:

Apparel Manufacturing Technology

COURSE OBJECTIVES

- To enable the students to understand the production planning in garment industry
- To emphasis on the improved methods of material control in apparel production
- To acquaint students with quality concepts for implementing quality in apparel production

UNIT-I	INTRODUCTION TO PROCESS CONTROL	9
Process control parameters in garment manufacturing, concepts of concurrent engineering, reverse engineering of standard garments, production planning and time and action calendar, sampling stages, steps between prototypes to production, product data management and understanding specification sheet.		


UNIT-II	LAY PLANNING AND AUTOMATION	9
Basic principles of the lay planning process; automation of lay planning process and cutting room operations; influence of fabric design on marker making process, marker utilization, bundle distributions, Current practices in cutting room – cut piece distribution and tracking.		

UNIT-III	OPERATION BREAKDOWN	9
Practices followed for style changeover – Operation break down and production sequence, line balancing, identification of bottle necks and critical operations, operation wise machinery allocation – basic shirts, trousers, skirts; usage of special attachments and tools for operation simplifications, production grid and flow chart.		

UNIT-IV	MATERIAL MANAGEMENT	9
Material management – Manufacturing Resources Planning (MRP), just in time production system (JIT), Kanban system, Optimized production technology (OPT), Economic order Quantity (EOQ), ABC, VED analysis in inventory control.		

UNIT-V	QUALITY CONTROL	9
Final audit/inspection – finishing and packing; packing – ratio packing, solid packing, short shipment, excess shipment, calculation of volumetric weight, carton and other packing requirements; concept of AQL.		

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Jacob Solinger., "Apparel Production Handbook", Reinhold Publications, 1998, ISBN: 1879570009 / ISBN: 978-1879570009
2. Carr H and Latham B., "The Technology of Clothing Manufacturing", Blackwell Science, U.K., 1994, ISBN: 0632037482 | ISBN-13: 9780632037483
3. Ruth E. Glock., and Grace I. Kunz., "Apparel Manufacturing, Sewn Product Analysis", Fourth Edition, Pearson Education, 2004, ISBN: 0131119826 ISBN-13: 9780131119826
4. Vilumsone I and Nemes., "Industrial cutting of textile materials", Woodhead Publishing Limited, 2012, ISBN: 978-0081021224/ ISBN: 0081021224

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1. Laing R.M., and Webster J., "Stitches & Seams", The Textile Institute, India, 1999, ISBN: 1870812735 | ISBN-13: 9781870812733
2. Shaeffer Claire., "Sewing for the Apparel Industry", Prentice Hall, New Jersey, 2001, ISBN: 0321062841 | ISBN-13: 9780321062840
3. Singer., "Sewing Lingerie", Cy DeCosse Incorporated, 1991, ISBN: 0865732604 | ISBN13: 9780865732605
4. Patty Brown., and Janett Rice., "Ready-To-Wear Apparel Analysis", Third Edition, Prentice-Hall Inc., New Jersey, 2000, ISBN: 0130254347 | ISBN-13: 9780130254344
5. Chuter A.J., "Introduction to Clothing Production Management", Blackwell Scientific Publications, Oxford, 2001, ISBN: 0632039396 | ISBN-13: 9780632039395

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Analyze the process control in garment manufacture

CO2: Perform the production planning and line balancing

CO3: Understand the lay planning process

CO4: Explain the material management techniques

CO5: Analyze the quality control in garment manufacture


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24UFT1501	TEXTILE CHEMICAL PROCESSING	L	T	P	C
		3	0	2	4

COURSE OBJECTIVES

- To learn about pre-treatments involved in the wet processing of textiles
- To learn the dyeing and printing of textiles
- To learn the finishing and color matching concepts in textiles

UNIT-I	PREPARATORY PROCESSES	9
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Introduction – Process sequence of wet processing for woven's and knits. Singeing electric and gas singeing. Desizing hydrolytic, oxidative and enzymatic. Scouring alkaline and enzymatic. Bleaching – hypochlorite, peroxide and sodium chlorite bleaching. Optical whitening. Mercerizing tension, tensionless and tubular mercerization.

UNIT-II	DYEING	9
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Dyeing equipment – jigger, winch, soft flow, jet dyeing, J-box, padding mangles, package dyeing and garment dyeing machine. Classification of dyes. Dyeing of cotton using direct, reactive, vat and sulphur dyes. Dyeing of polyester using carrier, HTHP and thermo sol. Dyeing of cellulosic blends (one bath and two bath process); Effluent and zero water discharge.

UNIT-III	PRINTING	9
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Ingredients of print paste. Styles of printing – direct, discharge, resist, tie and dye and batik. Methods of printing – block, stencil, roller, rotary, flat bed, transfer and chest printing. Special prints – flock, foam, foil, glitter, kadi, leather, pearl and rubber. After treatments of printed goods.

UNIT-IV	FINISHING	9
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Mechanical finishing – raising, shearing, sueding, anti-shrink finish, compacting, decatizing, calendaring, embossing. Chemical finishing – softening, crease resist, bio polishing, flame retardant, water repellent, water proof, soil release, antimicrobial, UV protection finish. Denim washing.

UNIT-V	COMPUTER COLOR MATCHING CONCEPTS	9
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Color; Electromagnetic spectrum – visible range, measurement of color strength – color matching – theory and applications. Spectrophotometer and color matching systems. Quality control using color matching systems, color difference – pass / fail system and shade sorting.

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Trotman E. R., "Dyeing and Chemical Technology of Textile Fibres", B.I Publishing Pvt. Ltd., New Delhi, 1994, ISBN: 0471809101 | ISBN-13: 9780471809104
2. Karmarkar S.R., "Chemical Technology in Pre-treatment processes of Textiles", Elsevier Publications, Newyork, 1999, ISBN: 044450060X | ISBN-13: 9780444500601
3. Shenai V. A., "Chemistry of Dyes and Principles of Dyeing", Sevak Publications, Mumbai, 1995, ISBN: B0007BFE9Y

4. Shenai V. A., "Technology of Printing", Sevak Publications, Mumbai, 1996
5. Miles W. C., "Textile Printing", Woodhead Publication, 2003, ISBN 0901956761

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

LIST OF EXPERIMENTS

1. Desizing and scouring of cotton fabric
2. Peroxide bleaching of cotton yarn/fabric
3. Dyeing of cotton using reactive and vat dyes
4. Dyeing of silk yarn / fabric with acid dyes
5. Dyeing of polyester using disperse dyes
6. Dyeing of polyester and cotton blend
7. Determination of wash, light, perspiration and rubbing fastness of dyed fabrics
8. Printing of cotton fabric using direct style
9. Water proof and flame-retardant finishing of cotton
10. Shrinkage of woven and knitted fabrics
11. Spirality and course length of knitted fabrics

L: 00	T: 00	P: 30	T: 30 Periods
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LIST OF EQUIPMENTS REQUIRED

Stainless vats (500 ml)
Water bath
Thermometer
Stirrer
Steam ager
Pilot padding mangle
HTHP Beaker dyeing machine
Pilot curing chamber
Laundrometer
Crockmeter
Printing table
Printing screens
Grey scale

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Explain the preparatory process in chemical processing

CO2: Understand the classes, machines, stages and application of dyes

CO3: Discuss about the ingredients, types and machines and faults in printing

CO4: Perform the various methods and application of finishing

CO5: Evaluate the strength of color and color difference

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24UFT511	COMPUTER AIDED GARMENT DESIGNING LABORATORY	L	T	P	C
		0	0	3	1.5

Prerequisites:

Pattern Engineering

COURSE OBJECTIVES

- To learn drafting of pattern using CAD
- To learn grading of pattern
- To learn marker planning for different types of fabrics

LIST OF EXPERIMENTS

1. Digitize and develop graded patterns for a Baby frock using a one-way fabric of 38" and 42" width
2. Digitize and develop graded patterns for a kid's Rompers using a two-way fabric of 38" and 42" width
3. Develop graded patterns and marker plan for a Ladies top with fabric of 44" and 52" width. Calculate the fabric consumption
4. Develop pattern and marker plan for a Men's Basic T shirt of 48" fabric width. Calculate the fabric consumption. Develop a cut order plan
5. Develop graded patterns and marker plan for Men's Formal Trouser using fabric of 60" and 72" width. Calculate the fabric consumption
6. Develop graded patterns and marker plan for a Ladies Skirt using plaid fabric of 38" and 60" width
7. Develop graded patterns for a Men's Full arm shirt
8. Develop marker plan and cut order plan for a Men's Full arm shirt using fabric of 60" and 72" width. Calculate the fabric consumption
9. Develop graded patterns and marker plan for Salwar using fabric of 60" and 72" width. Calculate the fabric consumption
10. Develop graded patterns and marker plan for Kameez using fabric of 60" and 72" width. Calculate the fabric consumption
11. Develop graded patterns and marker plan for a Men's vest using fabric of 38" and 42" width. Calculate the marker efficiency and fabric consumption. Develop a specification sheet and cut order plan for the vest
12. Develop graded patterns and marker plan for a Men's brief using fabric of 38" and 42" width

L: 00	T: 00	P: 45	T: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

Computer
Pattern making and Marker planning software

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Digitize and develop graded patterns for kid's wear

CO2: Digitize and develop graded patterns for men's wear

CO3: Digitize and develop graded patterns for women's wear

CO4: Prepare marker planning

CO5: Calculate fabric consumption and to develop cut order plan


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24UFT512	INDUSTRIAL TRAINING/INTERNSHIP I	L	T	P	C
		0	0	0	2

Prerequisites:

Nil

COURSE OBJECTIVES

- To get connected with industry/ laboratory/research institute
- To get practical knowledge on production process in the industry and develop skills to solve related problems
- To develop skills for carrying out research in the research institutes/laboratories

The students individually undergo training in reputed firms/ research institutes / laboratories for the specified duration. After the completion of training, a detailed report should be submitted within ten days from the commencement of next semester. The students will be evaluated as per the Regulations.

No. of Weeks: 04

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Summarize the organizational structure and production processes in the firm or research facilities in the laboratory/research institute

CO2: Outline the plant layout and machinery required for production

CO3: Analyze the industrial / research problems and their solution

CO4: Document the material specifications, machine and process parameters, testing parameters and results

CO5: Prepare of technical report and presentation


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B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR VI SEMESTER

24UFT601	INDUSTRIAL ENGINEERING IN GARMENT MANUFACTURING	L	T	P	C
		3	0	0	3

Prerequisites:

Apparel Production Planning and Control

COURSE OBJECTIVES

- To learn about basics of industrial engineering
- To learn about plant layout and line balancing
- To provide knowledge on different tools of industrial engineering and its application In apparel industry

UNIT-I	INTRODUCTION TO INDUSTRIAL ENGINEERING	9
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Industrial Engineering – Evolution, functions, role of industrial engineer; productivity concepts, causes for low productivity in apparel industry, suggestions for productivity improvement; basic work content, added work content, reduction of work content and ineffective time, work study introduction and procedure.

UNIT-II	METHOD STUDY	9
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Method study – Introduction, techniques of recording; method analysis techniques; principles of motion economy; method study in garment manufacture; ergonomics – Importance, workplace design, fatigue.

UNIT-III	WORK MEASUREMENT	9
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Work measurement – Introduction; time study – equipment and procedure; standard data; predetermined time standards; work sampling techniques; incentive wage system; work measurement applied to garment industry – calculation of SAM

UNIT-IV	PLANT LAYOUT	9
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Site selection for textile industry; plant layout – types of layouts suitable for textile industry, methods to construct layout; line balancing

UNIT-V	STATISTICAL PROCESS CONTROL	9
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Statistical Process Control – data collection; concept of AQL, control charts in quality control; process capability

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

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

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4. Enrick N. L., "Time study manual for Textile industry", Wiley Eastern (P) Ltd., 1989

REFERENCES

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

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Understand the basics of industrial engineering and productivity concepts

CO2: Apply the method study and its techniques

CO3: Apply the work measurement and its techniques

CO4: Analyse the concepts of layout and line balancing

CO5: Interpret the result using statistical process control


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24UFT602	APPAREL MARKETING AND MERCHANDISING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To learn about an overview of fashion industry
- To learn the concepts of fashion business
- To learn about the design merchandising, sourcing and export documentation

UNIT-I	FASHION INDUSTRY OVERVIEW	9
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Segments of the fashion industry – history and categories, influence of the customer; different generations and motivations behind the changes. Apparel business practices; business operations of domestic and export oriented of Indian apparel industries, consumer buying behavior, Market segmentation, market positioning.

UNIT-II	MARKETING FOR APPAREL AND TEXTILE PRODUCTS	9
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Uniqueness of apparel market, core concepts and orientation towards market place, strategies and planning, market research and forecast, customers, consumer markets and business markets, market segments and brand building, brand positioning and competition, programmatic marketing; digital and autonomous interventions, conversational interfaces – Artificial intelligence chat bots.

UNIT-III	DESIGN MERCHANDISING	9
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Concepts of merchandising, apparel product lines, dimensions of product change, determination and development of product line and product range; creative design of garments and accessories, new product development and seasons of sale, costing, co-ordination and communication with the production house and export house.

UNIT-IV	SOURCING	9
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Understanding the basics of sourcing, sourcing strategy and best sourcing practice in apparel and textile businesses, supply chain and demand chain, sourcing negotiations, global co-ordination in sourcing, materials management and quality in sourcing, quick response, ERP, supplier partnership in sourcing, JIT technology, made to fit.

UNIT-V	EXPORT DOCUMENTATION AND POLICIES	9
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Government policies, guide lines for apparel export and domestic trade, tax structures and government incentives in apparel trade; export documents and its purposes, banking activities, Letter of credit, logistics and shipping, foreign exchange regulation, export risk management and insurance; export finance, Special economic zones.

L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

1. Elian stone, Jean A samples, "Fashion Merchandising", McGraw Hill Book Company, New York, 1985, ISBN: 0-07-061742-2
2. Gibson.G.Vedamani, "Retail Management Functional Principles and Practices", Jaico Publishing House, Second Edition, 2002
3. Ruth.E.Glock, Grace I. Kunz "Apparel Manufacturing Sewn Product Analysis" Fourth Edition, Pearson Prentice Hall, NJ, 2005, ISBN: 81-7758-076-0

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1. Shivaramu.S., "Export Marketing– A Practical Guide to Exporters", Wheeler Publishing, Ohio, 1996, ISBN: 81-7544-166-6
2. Warren.J.Keegan and Mark.C.Green, "Global Marketing", Pearson Prentice Hall, New Delhi, 2005
3. Philip Kotler, Kevin Lane Keller, Abraham Koshy, and Mithileshwar Jha , "Marketing Management A South Asian Perspective", Pearson Education, New Delhi, 2006
4. NairSuja.R, "Retail Management", Himalaya Publishing House, 2008
5. John Donnellan, "Merchandise Buying and Management", Farichild Publications Inc., New York, 2002

COURSE OUTCOMES

At the end of the course students should be able to

- CO1: Explain the international apparel business and role of Asian countries in the apparel and fashion trade
- CO2: Apply the concepts of marketing in the apparel industry
- CO3: Analyze the concepts of merchandising and new product development
- CO4: Discuss the apparel product dynamics in a market and relate it along the value chain
- CO5: Understand export documentation and policies


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24UFT603	ADVANCED GARMENT CONSTRUCTION	L	T	P	C
		3	0	0	3

Prerequisites:

Garment Construction

COURSE OBJECTIVES

- To learn about the operation breakdown of male and female garments
- To learn about the line balancing in apparel production
- To learn about the quality inspection techniques followed in apparel industry

UNIT-I	OPERATION BREAKDOWN OF MALE GARMENTS	9
Operation breakdown for shirts, trousers, jackets, waist coats, T-shirts, casual bottoms, material flow, cut component progresses, machinery allocation, man power allocation.		

UNIT-II	OPERATION BREAKDOWN OF FEMALE GARMENTS	9
Operation breakdown for blouse variations, dresses, skirt, kameez, salwar, material flow, cut component progresses, machinery allocation, man power allocation; Seamless clothing		

UNIT-III	OPERATION BREAKDOWN FOR OTHER GARMENTS	9
Operation breakdown for Umbrella, six gore, circular skirt, trouser, chudidhar, night gown, material flow, cut component progresses, machinery allocation, man power allocation; Seamless clothing		

UNIT-IV	LINE BALANCING AND TYPES	9
Line set up, production line balancing, different production system, manual system, make through system, batch production system, progressive bundle system, straight line system, conveyor belt system, unit production system, modular production system, quick response system and Just in time system, RFID Techniques.		

UNIT-V	QUALITY CHECKING	9
Raw material, in process and final inspection, analysis of sewing ability of fabrics, care labeling.		


L: 45	T: 00	P: 00	T: 45 Periods
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TEXT BOOKS

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

REFERENCES

1. Ruth E. Glock, Grace I. Künz, "Apparel Manufacturing, Sewn Product Analysis", Fourth edition, Pearson Education, ISBN: 8177580760159


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

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Frame the operation breakdown for male garment

CO2: Develop the operation breakdown of female garment

CO3: Frame the operation breakdown for various styles and outline the concept of seamless garment

CO4: Determine the line balancing types for different styles

CO5: Interpret the quality control parameters

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24UFT611	ADVANCED GARMENT CONSTRUCTION LABORATORY	L	T	P	C
		0	0	3	1.5

Prerequisites:

Garment Construction Laboratory I

COURSE OBJECTIVES

- To learn the designing and development of men's and women's wear
- To learn the construction of men's and women's wear
- To study the parts and functions of specialized machines

LIST OF EXPERIMENTS

1. Study of feed-of-the arm machine and elastic attachment machine
2. Study of button holing and button fixing machine
3. Development of basic block patterns—top, skirt and bifurcated garments and grading of anyone (men's or ladies garment)
4. Designing and developing pattern for brassiere and panties
5. Construction of brassier and panties
6. Designing and developing pattern for construction of choli
7. Designing and developing pattern for men's formal shirt
8. Construction of men's formal shirt
9. Designing and developing pattern for men's formal trousers
10. Construction of men's formal trousers
11. Designing and developing pattern for knitted basic T-shirt
12. Construction of knitted basic T-shirt

L: 00	T: 00	P: 45	T: 45 Periods
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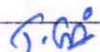
LIST OF EQUIPMENTS REQUIRED

Single needle lock stitch machine
 Flat lock machine with elastic attachment
 Feed-of-the arm machine
 Over lock machine
 Button holing machine
 Button attachment machine

COURSE OUTCOMES

At the end of the course students should be able to

- CO1: Develop samples using various special machines
- CO2: Design and draft patterns for women's wear
- CO3: Design and develop patterns for men's wear
- CO4: Construct different styles of women's wear
- CO5: Construct different styles of men's wear


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24UFT612	DESIGN COLLECTION/PORTFOLIO	L	T	P	C
		0	0	3	1.5

COURSE OBJECTIVES

- To learn the inspiration and forecast board
- To learn the concept board
- To learn the portfolio presentation with any theme

LIST OF EXPERIMENTS

Forecast board
Inspiration board
Theme board
Client profile
Color board
Look board
Sourcing board – Fabrics
Sourcing board – Trims
Pattern (doodle) development board
Fashion design presentation board – 8 nos.
Product development – One men's wear
Product development – One women's wear

L: 00	T: 00	P: 45	T: 45 Periods
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LIST OF EQUIPMENTS REQUIRED

Drawing tables

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Develop design research process and conceptualization

CO2: Prepare theme/inspiration and mood board

CO3: Execute client, color and look board

CO4: Prepare fabrics, trims and design board

CO5: Develop product for men's and women's wear


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B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR VII SEMESTER

24UFT701	APPAREL COSTING	L	T	P	C
		2	1	0	3

COURSE OBJECTIVES

- To acquaint cost accounting fundamentals.
- To overhead distribution and budgeting process.
- To understand the various concepts of fabric cost calculations.
- To understand various techniques of costing principles in the apparel industry.
- To know about the foreign exchange management and budgeting in apparel industries.

UNIT-I	COST ACCOUNTING – FUNDAMENTALS	9
Introduction to accounting – Cost accounting – Classification of cost – Cost accumulation – Cost sheet preparation – Cost sheet development – Balancing sheet – Cash flow chart – Methods of costing – Job Costing – Process costing – Tools for financial analysis and control.		

UNIT-II	OVERHEAD DISTRIBUTION AND BUDGETING PROCESS	9
Overheads – Overhead classifications – Overhead apportionment and allocation – Overhead absorption – Over and under absorption – Overhead distribution methods – Cost, volume and profit and loss analysis, Break-even analysis – Budgeting and Budgetary control – Functional budgets – Master Budget – Pricing decisions		

UNIT-III	FABRIC COST CALCULATIONS	9
Introduction – Woven fabric cost calculation – Warping process cost – Sizing department cost – Drawing in and denting cost – Weaving cost calculations – Knitted fabric cost calculation – Cost calculations in yarn dyeing – Cost calculation in fabric processing – Cost calculation in dyeing process – Finishing cost calculations.		

UNIT-IV	COSTING IN THE APPAREL INDUSTRY	9
Introduction – Consumption and cost calculation in apparel production departments – Printing and embroidery cost calculation – Sewing department costs calculation – Trimming and checking department cost calculation – Packing department cost calculation – Calculation of shipping and forwarding cost – Calculation of overall apparel manufacturing cost – Cost per minute in apparel costing.		

UNIT-V	FOREIGN EXCHANGE MANAGEMENT AND BUDGETING	9
Foreign exchange rates; foreign exchange management – risks, strategies to reduce risk; Budget, types of budgets, budgeting and control in apparel industry.		

L: 30	T: 15	P: 00	T: 45 Periods
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TEXT BOOKS

1. R.Rathinamoorthy, R.Surjit, K.J.Vishnu Vardhini "Handbook of Textile and Apparel Costing", CRC Press Taylor & Francis Group, Woodhead Publishing India Pvt.Ltd, Delhi, 2024.
2. William E Shinn, "Elements of Textile Costing", NCSU School of Textiles, Raleigh, 1995.
3. Varma HK, "Costing in Textile Industry", Prentice Hall Inc. New Jersey, 1992.

REFERENCES

1. Stephen P. Robbins & Mary Coulter, "Management", Prentice Hall of India, 10th Edition, 2009.
2. JAF Stoner, Feeman R.E and Daniel R Gilbert "Management", Pearson Education, 6th Ed.2004.
3. William E Shinn, "Elements of Textile Costing", NCSU School of Textiles, Raleigh, 1995.
4. Robin Looper & Regine Salgmolder, "Target Costing and Value Engineering", Taylor & Francis, Abingdon, 1997.

COURSE OUTCOMES

At the end of the course students should be able to

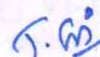
CO1: Infer the knowledge of cost accounting fundamentals.

CO2: Categorize overheads and budgeting.

CO3: Apply the concepts of fabric cost calculations.

CO4: Apply costing techniques for apparel manufacturing.

CO5: Outline foreign exchange management and budgeting concepts in apparel industries.



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24UFT711	APPAREL PRODUCT ENGINEERING LABORATORY	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES

- To enable the students to test and analyze the given apparel product that include identification of fibre, yarn and fabric specifications and method of production of same.

LIST OF EXPERIMENTS

Reverse engineering of apparel products with an emphasis on

1. Identification of apparel construction methods and parameters
2. Identification of fabric specifications, materials used and related tests
3. Identification of coloring of product and related tests
4. Identification of sources for procurement of materials and (or, whichever is applicable) machineries required to produce the apparel
5. Estimating approximate cost of product

–Three each for a student (01-Kid’s wear, 01-Men’s wear and 01-Women’s wear)

L: 00	T: 00	P: 60	T: 60 Periods
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COURSE OUTCOMES

At the end of the course students should be able to

CO1: Identify the method of construction and materials used in the product.

CO2: Perform confirmative tests to identify specifications of materials used.

CO3: Suggest the production process required to make the product.

CO4: Identify the sources for material procurement.

CO5: Estimate the cost of product.


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24UFT712	INDUSTRIAL TRAINING/INTERNSHIP II	L	T	P	C
		0	0	0	2

Prerequisites:

Industrial Training/Internship I

COURSE OBJECTIVES

- To get connected with industry/laboratory/research institute
- To get practical knowledge on production process in the industry and develop skills to solve related problems
- To develop skills for carrying out research in the research institutes/laboratories

The students individually undergo training in reputed firms/ research institutes / laboratories for the specified duration. After the completion of training, a detailed report should be submitted within ten days from the commencement of next semester. The students will be evaluated as per the Regulations.

No. of Weeks: 04

COURSE OUTCOMES

At the end of the course students should be able to

CO1: Summarize the organizational structure and production processes in the firm or research facilities in the laboratory/research institute

CO2: Outline the plant layout and machinery required for production

CO3: Analyze the industrial / research problems and their solution

CO4: Document the material specifications, machine and process parameters, testing parameters and results

CO5: Prepare of technical report and presentation

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B. TECH. FASHION TECHNOLOGY

CHOICE BASED CREDIT SYSTEM

SYLLABUS FOR VIII SEMESTER

24UFT811	PROJECT WORK / INTERNSHIP	L	T	P	C
		0	0	20	10

COURSE OBJECTIVES

- To identify problem and developing the structured methodology to solve the identified problem in the industry or research problem at research Institution or college.
- To conduct experiments, analyze and discuss the test results, and make conclusions.
- To prepare project reports and presentation.

The students shall individually / or as group work on a specific topic approved by the Department. The student can select any topic which is relevant to his/her specialization of the programme. The student should continue the work on the selected topic as per the formulated methodology. At the end of the semester, after completing the work to the satisfaction of the supervisor and review committee, a detailed report which contains clear definition of the identified problem, detailed literature review related to the area of work and methodology for carrying out the work, results and discussion, conclusion and references should be prepared as per the format prescribed by the University and submitted to the Head of the department. The students will be evaluated based on the report and viva-voce examination by a panel of examiners as per the Regulations.

L: 00	T: 00	P: 300	T: 300 Periods
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COURSE OUTCOMES

At the end of the course students should be able to

CO1: Formulate and analyze the problem to develop new product.

CO2: Design and conduct experiments to find solution.

CO3: Analyze the results and provide solution for the identified problem, prepare project report and make presentation.


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