DEPARTMENT OF TEXTILE TECHNOLOGY

ANNA UNIVERSITY, CHENNAI

Vision:

The Vision of the Department of Textile Technology, Anna University is to be recognized as a leader in textile and apparel technology education, research and application of knowledge and skills to benefit the society.

Mission:

The mission of the Department of Textile Technology, Anna University is

- To deliver the highest quality textile and apparel technologists with societal values.
- To carryout cutting-edge research and develop innovative technology for the benefit of society at national and international level.
- To inculcate a sense of highest ethical and professional standards among the students.

Attested

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Centre for Academic Courses
Anna University, Chennai-600 025

ANNA UNIVERSITY: : CHENNAI: 600 025
UNIVERSITYDEPARTMENTS
B.TECH. APPAREL TECHNOLOGY
REGULATIONS–2019
CHOICEBASED CREDIT SYSTEM

PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

Bachelor of Apparel Technology curriculum is designed to prepare the undergraduates to

I. Have attitude and knowledge for the successful professional and technical career
II. Have strong foundation in basic sciences, engineering, management, mathematics and computational platforms
III. Have knowledge on the theory and practices in the field of apparel manufacturing technology and allied areas
IV. Engross in life-long learning to keep themselves abreast of new developments, and practice and inspire high ethical values and technical standards

PROGRAM OUTCOMES (POs):

The Apparel Technology Graduates will have the ability to

1. Identify, formulate, review literature and critically analyze the technological problems in the apparel industry to reach substantiated conclusion
2. Apply knowledge of mathematics, sciences, engineering and apparel technology to get solution for the technological problems in apparel industry
3. Design and develop the solutions to the technological and managerial problems in apparel industry with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions to the technological problems in apparel industry
5. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools for managing apparel manufacturing companies with an understanding of the limitations
6. Apply reasoning gained through the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the profession
7. Understand the impact of the developed solutions in societal and environmental contexts, and demonstrate the knowledge for sustainable development
8. Understand ethical and professional responsibilities
9. Function effectively as an individual, and as a member or leader in diverse teams in the profession

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10. Communicate effectively on complex engineering activities with the engineering community and with society at large. Able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
12. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

The Apparel Technology Graduates will have the ability to

1. Understand and apply the technical knowledge for managing garment manufacturing industry
2. Be a successful entrepreneur, fashion designer and professional for apparel management
3. Design and develop novel apparel products and apparel manufacturing processes

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Mapping of Programme Educational Objective with Programme Outcomes

Program Educational Objectives	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
I	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
II	✓	✓	✓	✓			✓					
III	✓				✓							
IV		✓	✓					✓				✓

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Mapping of Course outcomes with Program Outcomes

Sl. NO.	Course title	Program outcomes												Program Specific Outcomes		
HUMAN AND SOCIAL SCIENCES INCLUDING MANAGEMENT COURSES (HSMC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Technical English															
2	Professional Communication															
3	Human Relations at Work															
4	Ethics and Holistic Life															
5	Fundamentals of Economics and Management															
BASIC SCIENCE COURSES(BSC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Engineering Mathematics I															
2	Engineering Physics															
3	Engineering Chemistry															
4	Basic Sciences Laboratory															
5	Engineering Mathematics II															
6	Chemistry for Technologists															
7	Probability and statistics															
8	Environmental Sciences															
ENGINEERING SCIENCE COURSES(ESC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Engineering Graphics															
2	Workshop Practices Lab															
3	Problem solving and Python programming															
4	Basics of Electrical and Electronics Engineering															
5	Engineering Mechanics															
6	Electrical and Electronics Engineering Laboratory															
7	Problem solving and Python programming lab															
PROFESSIONAL CORE COURSES(PCC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1.	Technology of Spinning	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓

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	and Weaving															
2.	Characteristics of Textile Fibres	✓	✓	✓	✓	✓					✓	✓		✓	✓	✓
3.	Fundamentals of Fashion and Sewing	✓	✓	✓		✓					✓	✓		✓	✓	✓
4.	Pattern Making I	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓
5.	Pattern Making Lab I	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓	✓	✓
6.	Garment Construction	✓	✓	✓							✓	✓		✓	✓	✓
7.	Fundamentals of Knitting and Nonwoven Manufacture	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓
8.	Garment Production Machinery	✓	✓	✓							✓	✓	✓	✓	✓	✓
9.	Pattern Making II(Prerequisite for this course is AT5303)	✓	✓	✓				✓		✓	✓	✓	✓	✓	✓	✓
10.	Fabric Structure	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓
11.	Pattern Making Lab II	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓
12.	Garment construction lab I	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓
13.	Textile Chemical Processing							✓		✓	✓	✓	✓			
14.	Fabric Quality Evaluation	✓	✓	✓	✓				✓	✓		✓		✓	✓	✓
15.	Fashion design lab	✓	✓	✓						✓	✓	✓		✓	✓	✓
16.	Garment Construction lab II	✓	✓	✓			✓			✓	✓	✓		✓	✓	✓
17.	Financial Management for Apparel Industry	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
18.	Apparel Production Planning and Process Control	✓	✓	✓						✓	✓	✓		✓	✓	✓
19.	Garment sizing and fit	✓	✓	✓	✓						✓	✓		✓	✓	✓
20.	Fashion Portfolio Development Lab	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
21.	Computer Aided Pattern making Lab	✓	✓	✓					✓	✓	✓	✓		✓	✓	✓
22.	Industrial Engineering in Apparel Industry	✓	✓	✓					✓		✓	✓		✓	✓	✓
23.	Apparel Marketing and Merchandising	✓	✓	✓	✓	✓					✓	✓		✓	✓	✓
PROFESSIONAL ELECTIVE COURSES(PEC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1.	Apparel Accessories and	✓	✓	✓			✓	✓			✓	✓		✓	✓	✓

	Embellishments															
2.	Home Textiles	✓	✓	✓			✓	✓			✓	✓		✓	✓	✓
3.	Intimate Apparels	✓	✓	✓							✓	✓		✓	✓	✓
4.	Apparel retail management	✓	✓	✓					✓	✓	✓	✓		✓		✓
5.	Fashion Draping Lab	✓	✓	✓						✓	✓	✓		✓	✓	✓
6.	Garment Finishing and Care	✓	✓	✓							✓	✓		✓	✓	✓
7.	Enterprise Resource Planning for Apparel Industry	✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓
8.	Computer aided garment design lab	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓
9.	Production and Application of Sewing Threads	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓
10	Protective and smart garments	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓
11	Technology of nonwoven	✓	✓	✓	✓	✓	✓	-		✓	✓	✓	✓	✓	✓	✓
12	Clothing comfort	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
13	Application of statistics in apparel industry	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
14	Brand Management	✓	✓					✓	✓		✓	✓		✓	✓	
15	Operations Research for Textile Industry	✓	✓	✓	✓	✓			✓		✓	✓		✓	✓	✓
16	Supply Chain Management for Textile Industry	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
17	Textile and Apparel EXIM Management		-	✓	✓	✓					✓	✓	✓	✓		
18	Total Quality Management for Textile Industry	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	
19	Entrepreneurship in apparel manufacture	✓	✓						✓	✓	✓	✓	✓		✓	
20	Human Resource Management	✓	✓	✓					✓	✓	✓	✓		✓	✓	
EMPLOYABILITY ENHANCEMENT COURSES(EEC)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1.	Industrial training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.	Project I	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3.	Project II	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

ANNA UNIVERSITY :: CHENNAI

UNIVERSITY DEPARTMENTS

B.TECH. APPAREL TECHNOLOGY

REGULATIONS–2019

CHOICEBASED CREDIT SYSTEM

CURRICULUM AND SYLLABI FOR I TO VIII SEMESTERS

(Applicable to Students admitted from the Academic Year 2020-2021 onwards)

SEMESTER I

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODSPER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	HS5151	Technical English	HSMC	4	0	0	4	4
2.	MA5158	Engineering Mathematics I	BSC	3	1	0	4	4
3.	PH5151	Engineering Physics	BSC	3	0	0	3	3
4.	CY5151	Engineering Chemistry	BSC	3	0	0	3	3
5.	GE5151	Engineering Graphics	ESC	1	0	4	5	3
PRACTICALS								
6.	BS5161	Basic Sciences Laboratory	BSC	0	0	4	4	2
7.	GE5162	Workshop Practices Laboratory	ESC	0	0	4	4	2
			TOTAL	**14**	**1**	**12**	**27**	**21**

SEMESTER II

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODSPER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	HS5251	Professional Communication	HSMC	4	0	0	4	4
2.	MA5252	Engineering Mathematics II	BSC	3	1	0	4	4
3.	GE5153	Problem Solving and Python programming	ESC	3	0	0	3	3
4.	EE5251	Basics of Electrical and Electronics Engineering	ESC	3	0	0	3	3
5.	GE5152	Engineering Mechanics	ESC	3	1	0	4	4
6.	CY5251	Chemistry for Technologists	BSC	3	0	0	3	3
PRACTICALS								
7.	GE5161	Problem solving and Python Programming Laboratory	ESC	0	0	4	4	2
8.	EE5261	Electrical and Electronics Engineering Laboratory	ESC	0	0	4	4	2
			TOTAL	**19**	**2**	**8**	**29**	**25**

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SEMESTER III

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODSPER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	MA5354	Probability and Statistics	BSC	3	1	0	4	4
2.	AT5301	Technology of Spinning and Weaving	PCC	3	0	0	3	3
3.	AT5351	Characteristics of Textile Fibres	PCC	3	0	0	3	3
4.	AT5302	Fundamentals of Fashion and Sewing	PCC	2	0	2	4	3
5.		Elective - Humanities I	HSMC	3	0	0	3	3
6.	AT5303	Pattern Making I	PCC	3	0	0	3	3
PRACTICALS								
7.	AT5311	Pattern Making Lab 1	PCC	0	0	4	4	2
			TOTAL	**17**	**1**	**6**	**24**	**21**

SEMESTER IV

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Elective - Humanities II	HSMC	3	0	0	3	3
2.		Audit Course - I*	AC	3	0	0	3	0
3.	AT5401	Garment Construction	PCC	3	0	0	3	3
4.	AT5402	Fundamentals of Knitting and Nonwoven Manufacture	PCC	3	0	0	3	3
5.	AT5451	Garment Production Machinery	PCC	2	0	2	4	3
6.	AT5452	Pattern Making II (Prerequisite for this course is AT5303)	PCC	3	0	0	3	3
7.	AT5403	Fabric Structure	PCC	2	0	4	6	4
PRACTICALS								
8.	AT5411	Pattern Making Lab II	PCC	0	0	4	4	2
9.	AT5412	Garment Construction Lab I	PCC	0	0	4	4	2
10.	AT5513	Internship/Training I**	EEC	-	-	-	-	-
			TOTAL	**19**	**0**	**14**	**33**	**23**

***** Audit Course is optional

******Students shall undergo Internship/Training for a minimum period of 4 weeks and assessment of the same will be done fifth semester

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SEMESTER V

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Audit Course - II*	AC	3	0	0	3	0
2.	HM5551	Fundamentals of Economics and Management	HSMC	3	0	0	3	3
3.	AT5501	Textile Chemical Processing	PCC	3	0	2	5	4
4.	AT5502	Fabric Quality Evaluation	PCC	2	0	2	4	3
5.		Professional Elective I	PEC	3	0	0	3	3
6.		Professional Elective II	PEC	3	0	0	3	3
7.	GE5251	Environmental Sciences	BSC	3	0	0	3	3
PRACTICALS								
8.	AT5511	Fashion Design lab	PCC	0	0	4	4	2
9.	AT5512	Garment Construction Lab II	PCC	0	0	4	4	2
10.	AT5513	Internship/Training I	EEC	-	-	-	-	2
			TOTAL	**20**	**0**	**12**	**32**	**25**

***** Audit Course is optional

SEMESTER VI

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	AT5601	Financial Management for Apparel Industry	PCC	3	0	0	3	3
2.	AT5602	Apparel Production Planning and Process Control	PCC	3	0	0	3	3
3.	AT5603	Garment Sizing and Fit	PCC	3	0	0	3	3
4.		Professional Elective III	PEC	3	0	0	3	3
5.		Professional Elective IV	PEC	3	0	0	3	3
6.		Professional Elective V	PEC	3	0	0	3	3
7.		Open Elective I	OEC	3	0	0	3	3
PRACTICALS								
8.	AT5611	Fashion Portfolio Development Lab	PCC	0	0	4	4	2
9.	AT5612	Computer Aided pattern making lab	PCC	0	0	4	4	2
10.	AT5711	Internship/Training II*	EEC	-	-	-	-	-
			TOTAL	**21**	**0**	**8**	**29**	**25**

*Students have to undergo Internship/Training for a minimum period of 4 weeks and assessment of the same will be done during VII semester.

SEMESTER VII

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	AT5751	Industrial Engineering in Apparel Industry	PCC	3	0	0	3	3
2.	AT5752	Apparel Marketing and Merchandising	PCC	3	0	0	3	3
3.		Professional Elective VI	PEC	3	0	0	3	3
4.		Professional Elective VII	PEC	3	0	0	3	3
5.		Open Elective II	OEC	3	0	0	3	3
PRACTICALS								
7	AT5711	Internship/Training II	EEC	-	-	-	-	2
8	AT5712	Comprehension	EEC			4	4	2
9	AT5713	Project I				6	6	3
			TOTAL	**15**	**0**	**10**	**25**	**22**

SEMESTER VIII

SI. NO.	CODE NO.	COURSETITLE	CATE GORY	PERIODS PERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
PRACTICALS								
1.	AT5811	Project II	EEC	0	0	16	16	8
			TOTAL	**0**	**0**	**16**	**16**	**8**

TOTAL CREDITS: 170

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LIST OF PROFESSIONAL ELECTIVES [PEC]

Sl. No.	Code No.	Course Title	Periods per week			Credits
			Lecture	Tutorial	Practical	
1.	AT5001	Apparel Accessories and Embellishments	2	0	2	3
2.	AT5002	Home Textiles	3	0	0	3
3.	AT5003	Intimate Apparels	3	0	0	3
4.	AT5004	Apparel retail management	3	0	0	3
5.	AT5005	Fashion Draping Lab	0	0	6	3
6.	AT5006	Garment Finishing and Care	3	0	0	3
7.	AT5071	Enterprise Resource Planning for Apparel Industry	0	0	6	3
8.	AT5007	Computer aided garment design lab	0	0	6	3
9.	AT5072	Production and Application of Sewing Threads	3	0	0	3
10.	AT5008	Protective and smart garments	3	0	0	3
11.	TT5551	Technology of nonwoven	3	0	0	3
12.	TT5075	Clothing comfort	3	0	0	3
13.	AT5009	Application of statistics in apparel industry	2	0	2	3
14.	AT5010	Brand Management	3	0	0	3
15.	TT5071	Operations Research for Textile Industry	3	0	0	3
16.	TT5072	Supply Chain Management for Textile Industry	3	0	0	3
17.	TT5073	Textile and Apparel EXIM Management	3	0	0	3
18.	TT5074	Total Quality Management for Textile Industry	3	0	0	3
19.	AT5011	Entrepreneurship in apparel manufacture	3	0	0	3
20.	AT5012	Human Resource Management	3	0	0	3

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HUMANITIES AND SOCIAL SCIENCES (HSMC) – MANAGEMENT AND OTHERS

Sl.No.	Code No.	CourseTitle	Periods per week			Credits	Semester
			Lecture	Tutorial	Practical		
1.	HS5151	Technical English	4	0	0	4	1
2.	HS5251	Professional Communication	4	0	0	4	2
3.	HM5551	Fundamentals of Economics and Management	3	0	0	3	5
					Total Credits:	**11**	

HSMC– ELECTIVES – HUMANITIES I (ODD SEMESTER)

Sl. No	Course Code	Course Title	Periods per week			Credits
			Lecture	Tutorial	Practical	
1.	HU5171	Language and Communication	3	0	0	3
2.	HU5172	Values and Ethics	3	0	0	3
3.	HU5173	Human Relations at Work	3	0	0	3
4.	HU5174	Psychological Process	3	0	0	3
5.	HU5175	Education, Technology and Society	3	0	0	3
6.	HU5176	Philosophy	3	0	0	3
7.	HU5177	Applications of Psychology in Everyday Life	3	0	0	3

HSMC– ELECTIVES – HUMANITIES II (EVEN SEMESTER)

Sl. No	Course Code	Course Title	Periods per week			Credits
			Lecture	Tutorial	Practical	
1.	HU5271	Gender Culture and Development	3	0	0	3
2.	HU5272	Ethics and Holistic Life	3	0	0	3
3.	HU5273	Law and Engineering	3	0	0	3
4.	HU5274	Film Appreciation	3	0	0	3
5.	HU5275	Fundamentals of Language and Linguistics	3	0	0	3
6.	HU5276	Understanding Society and Culture through Literature	3	0	0	3

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BASICS CIENCE COURSE [BSC]

Sl. No.	Code No.	Course Title	Periods per week			Credits	Semester
			Lectur	Tutorial	Practical		
1.	MA5158	Engineering Mathematics I	3	1	0	4	1
2.	PH5151	Engineering Physics	3	0	0	3	1
3.	CY5151	Engineering Chemistry	3	0	0	3	1
4.	BS5161	Basic Sciences Laboratory	0	0	4	2	1
5.	MA5252	Engineering Mathematics II	3	1	0	4	2
6.	CY5251	Chemistry for Technologists	3	0	0	3	2
7.	MA5354	Probability and statistics	3	1	0	4	3
8.	GE5251	Environmental Sciences	3	0	0	3	5
					Total Credits:	**26**	

ENGINEERING SCIENCE COURSE [ESC]

Sl. No.	Code No.	CourseTitle	Periods per week			Credits	Semester
			Lecture	Tutorial	Practical		
1.	GE5151	Engineering Graphics	1	0	4	3	1
2.	GE5162	Workshop Practices Lab	0	0	4	2	1
3.	GE5153	Problem solving and Python programming	3	0	0	3	2
4.	EE5251	Basics of Electrical and Electronics Engineering	3	0	0	3	2
5.	GE5152	Engineering Mechanics	3	1	0	4	2
6.	EE5261	Electrical and Electronics Engineering Laboratory	0	0	4	2	2
7.	GE5161	Problem solving and Python programming lab	0	0	4	2	2
					Total Credits:	**19**	

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PROFESSIONALCORE COURSES [PCC]

Sl. No.	Code No.	Course Title	Periods per week			Credits	Semester
			Lecture	Tutorial	Practical		
1.	AT5301	Technology of Spinning and Weaving	3	0	0	3	3
2.	AT5351	Characteristics of Textile Fibres	3	0	0	3	3
3.	AT5302	Fundamentals of Fashion and Sewing	2	0	2	3	3
4.	AT5303	Pattern Making I	3	0	0	3	3
5.	AT5311	Pattern Making Lab I	0	0	4	2	3
6.	AT5401	Garment Construction	3	0	0	3	4
7.	AT5402	Fundamentals of Knitting and Nonwoven Manufacture	3	0	0	3	4
8.	AT5451	Garment Production Machinery	2	0	2	3	4
9.	AT5452	Pattern Making II(Prerequisite for this course is AT5303)	3	0	0	3	4
10.	AT5403	Fabric Structure	2	0	4	4	4
11.	AT5411	Pattern Making Lab II	0	0	4	2	4
12.	AT5412	Garment construction lab I	0	0	4	2	4
13.	AT5501	Textile Chemical Processing	3	0	2	4	5
14.	AT5502	Fabric Quality Evaluation	2	0	2	3	5
15.	AT5511	Fashion design lab	0	0	4	2	5
16.	AT5512	Garment Construction lab II	0	0	4	2	5
17.	AT5601	Financial Management for Apparel Industry	3	0	0	3	6
18.	AT5602	Apparel Production Planning and Process Control	3	0	0	3	6
19.	AT5603	Garment sizing and fit	3	0	0	3	6
20.	AT5611	Fashion Portfolio Development Lab	0	0	4	2	6
21.	AT5612	Computer Aided Pattern making Lab	0	0	4	2	6
22.	AT5751	Industrial Engineering in Apparel Industry	3	0	0	3	7
23.	AT5752	Apparel Marketing and Merchandising	3	0	0	3	7
		Total credits				**64**	

PROFESSIONALELECTIVES [PEC]

Sl. No.	Code No.	Course Title	Periods per week			Credits	Semester
			Lecture	Tutorial	Practical		
1.	PEC	Professional Elective–I	3	0	0	3	5
2.	PEC	Professional Elective–II	3	0	0	3	6
3.	PEC	Professional Elective– III	3	0	0	3	7
4.	PEC	Professional Elective– IV	3	0	0	3	7
5.	PEC	Professional Elective–V	3	0	0	3	7
6.	PEC	Professional Elective–VI	3	0	0	3	8
7.	PEC	Professional Elective–VII	3	0	0	3	8
					Total Credits	21	

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EMPLOYABILITY ENHANCEMENT COURSES (EEC)

Sl. No.	Code No.	Course Title	Periods per week			Credits	Semester
			Lectur	Tutorial	Practical		
1	AT5513	Internship/ Training I	0	0	0	2	5
2	AT5711	Internship/Training II	0	0	0	2	7
3	AT5713	Project I	0	0	6	3	7
4	AT5811	Project II	0	0	16	8	8
5	AT5712	Comprehension			4	2	7
				Total Credits:		**17**	

AUDIT COURSES (AC)

Registration for any of these courses is optional to students

Sl. No.	Course Code	Course Title	Periods per week			Credits	Semester
			Lecture	Tutorial	Practical		
1.	AD5091	Constitution of India	3	0	0	0	**2/6**
2.	AD5092	Value Education	3	0	0	0	
3.	AD5093	Pedagogy Studies	3	0	0	0	
4.	AD5094	Stress Management by Yoga	3	0	0	0	
5.	AD5095	Personality Development Through Life Enlightenment Skills	3	0	0	0	
6.	AD5096	Unnat Bharat Abhiyan	3	0	0	0	
7.	AD5097	Essence of Indian Knowledge Tradition	3	0	0	0	
8.	AD5098	Sanga Tamil Literature Appreciation	3	0	0	0	

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SUMMARY

Sl. No.	Subject Area	Credits as per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1.	HSMC	4	4	3	3	3	-			17
2.	BSC	12	7	4	-	3				26
3.	ESC	5	14	-	-	-				19
4.	PCC			14	20	11	13	6		64
5.	PEC				-	6	9	6		21
6.	OEC				-		3	3		6
7.	EEC			-	-	2	-	7	8	17
8.	AC (Non Credit)	-	-	-	0	0	-	-	-	
Total		**21**	**25**	**21**	**23**	**25**	**25**	**22**	**8**	**170**

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SYLLABI

HS5151	TECHNICAL ENGLISH	L	T	P	C
		4	0	0	4

OBJECTIVES:

The first semester English course entitled 'Technical English' aims to,

- Familiarize first year students of engineering and technology with the fundamental aspects of technical English.
- Develop all the four language skills by giving sufficient practice in the use of the skills in real life contexts.
- Enhance the linguistic and communicative competence of first year engineering and technology students.

UNIT I INTRODUCING ONESELF 12

Listening: Listening and filling a form, listening to speeches by specialists from various branches of engineering and completing activities such as answering questions, identifying the main ideas of the listening text, style of the speaker (tone and tenor) – Speaking: Introducing oneself – introducing friend/ family - Reading: Descriptive passages (from newspapers / magazines)- Writing: Writing a paragraph (native place, school life)- Grammar: Simple present, present continuous – Vocabulary Development: One word substitution

UNIT II DIALOGUE WRITING 12

Listening: Listening to conversations (asking for and giving directions) –Speaking: making conversation using (asking for directions, making an enquiry), Role plays-dialogues**- Reading:** Reading a print interview and answering comprehension questions-Writing: Writing a checklist, Dialogue writing- Grammar: Simple past – question formation (Wh- questions, Yes or No questions, Tag questions)- Vocabulary Development: Stress shift, lexical items related to the theme of the given unit.

UNIT III FORMAL LETTER WRITING 12

Listening: Listening to speeches by famous people and identifying the central message of the speech – answering multiple-choice questions)-Speaking: Giving short talks on a given topic-Reading: Reading motivational essays on famous engineers and technologists (answering open-ended and closed questions)- Writing**:** Writing formal letters/ emails (Complaint letters)-Grammar: Future Tense forms of verbs, subject and verb agreement**-**Vocabulary Development: Collocations – Fixed expressions

UNIT IV WRITING COMPLAINT LETTERS 12

Listening: Listening to short talks (5 minutes duration and fill a table, gap-filling exercise) note taking/note making- Speaking: Small group discussion, giving recommendations-Reading: Reading problem – solution articles/essays drawn from various sources- Writing**:** Making recommendations – Writing a letter/ sending an email to the Editor- note making- Grammar: Modals – Phrasal verbs – cause and
effect sentences- Vocabulary Development: Connectives, use of cohesive devices in writing, technical vocabulary.

UNIT V WRITING DEFINITIONS AND PRODUCT DESCRIPTION 12

Listening: Listening to a product description (labeling and gap filling) exercises- Speaking: Describing a product and comparing and contrasting it with other products- Reading: Reading graphical material for comparison (advertisements)-Writing: Writing Definitions (short and long) – compare and contrast paragraphs**-** Grammar: Adjectives – Degrees of comparison - compound nouns- Vocabulary Development: Use of discourse markers – suffixes (adjectival endings).

TOTAL : 60 PERIODS

Learning Outcomes

At the end of the course the students will have gained,

CO1	Exposure to basic aspects of technical English.
CO2	The confidence to communicate effectively I various academic situations.
CO3	Learnt the use of basic features of Technical English.
CO4	Writing features of Technical English
CO5	Writing complaint letters

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Textbook:

1. Revised Edition of 'English for Engineers and Technologists' Volume 1 published by Orient Black Swan Limited 2019.

Assessment Pattern

- Assessments will assess all the four skills through both pen and paper and computer based tests.
- Assessments can be pen and paper based, quizzes.

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		L	T	P	C
MA5158	**ENGINEERING MATHEMATI CS – I (Common to all branches of B.E. / B.Tech. Programmes in I Semester)**	**3**	**1**	**0**	**4**

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 **12**

Eigenvalues and eigenvectors of a real matrix – characteristic equation – properties of eigenvalues and eigenvectors – cayley-hamilton theorem – diagonalization of matrices – reduction of a quadratic form to canonical form by orthogonal transformation – nature of quadratic forms.

UNIT II DIFFERENTIAL CALCULUS **12**

Limit of function – one sided limit – limit laws – continuity – left and right continuity – types of discontinuities – intermediate value theorem – derivatives of a function - differentiation rules – chain rule – implicit differentiation – logarithmic differentiation – maxima and minima – mean value theorem – (optional: polar coordinate system – differentiation in polar coordinates).

UNIT III FUNCTIONS OF SEVERAL VARIABLES **12**

Partial derivatives – homogeneous functions and euler's theorem – total derivative – differentiation of implicit functions – change of variables – jacobians – partial differentiation of implicit functions – taylor's series for functions of two variables – errors and approximations – maxima and minima of functions of two variables – lagrange's method of undetermined multipliers.

UNIT IV INTEGRAL CALCULUS **12**

Definite and indefinite integrals - substitution rule - techniques of integration - integration by parts, trigonometric integrals, trigonometric substitutions, integration of rational functions by partial fraction, integration of irrational functions - improper integrals.

UNIT V MULTIPLE INTEGRALS **12**

Double integrals – change of order of integration – double integrals in polar coordinates – area enclosed by plane curves – triple integrals – volume of solids – change of variables in double and triple integrals.

TOTAL :60 PERIODS

OUTCOMES:

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

CO1	Use the matrix algebra methods for solving practical problems.
CO2	Apply differential calculus tools n 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.

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TEXTBOOKS:

1. Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, 44th Edition, New Delhi, 2017.
2. James Stewart, "Calculus with Early Transcendental Functions", Cengage Learning, 6th Edition, New Delhi,2013.
3. Joel Hass, Christopher Heil and Maurice D.Weir, "Thomas' Calculus", Pearson, 14th Edition, New Delhi, 2018.
4. Narayanan S. and Manicavachagom Pillai T. K., “Calculus" Volume I and II, S. Viswanathan Publishers Pvt. Ltd., Chennai, 2009.

REFERENCES:

1. Bali N., Goyal M. and Watkins C., “Advanced Engineering Mathematics”, Firewall Media (An imprint of Lakshmi Publications Pvt., Ltd.,), 7th Edition, New Delhi, 2009.
2. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2015.
3. Greenberg M.D., “Advanced Engineering Mathematics”, Pearson Education2nd Edition, 5th Reprint, Delhi, 2009.
4. Jain R.K. and Iyengar S.R.K., “Advanced Engineering Mathematics”,Narosa Publications, 5th Edition, New Delhi, 2017.
5. Peter V.O’Neil, “Advanced Engineering Mathematics”, Cengage Learning India Pvt., Ltd, 7th Edition, New Delhi , 2012.
6. Ramana B.V., “Higher Engineering Mathematics”, Tata McGraw Hill Co. Ltd., 11th Reprint, New Delhi, 2010.

PH5151 **ENGINEERING PHYSICS** **L T P C**

(Common to all branches of B.E. / B.Tech. programmes) **3 0 0 3**

OBJECTIVE

- To make the students in understanding the importance of mechanics.
- To equip the students on the knowledge of electromagnetic waves.
- To introduce the basics of oscillations, optics and lasers.
- To enable the students in understanding the importance of quantum physics.
- To elucidate the application of quantum mechanics towards the formation of energy bands in crystalline materials.

UNIT I MECHANICS **9**

Moment of inertia (m.i) - radius of gyration - theorems of m .i - m.i of circular disc, solid cylinder , hollow cylinder , solid sphere and hollow sphere - k.e of a rotating body – m.i of a diatomic molecule – rotational energy state of a rigid diatomic molecule - centre of mass – conservation of linear momentum – relation between torque and angular momentum - torsional pendulum.

UNIT II ELECTROMAGNETIC WAVES **9**

Gauss's law – faraday's law - ampere's law - 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.

UNIT III OSCILLATIONS, OPTICS AND LASERS **9**

Simple harmonic motion - resonance - 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 - interferometers - air wedge experiment. theory of laser - characteristics - spontaneous and stimulated emission - einstein's coefficients - population inversion - nd-yag laser, co_2 laser, semiconductor laser - applications.

UNIT IV BASIC QUANTUM MECHANICS **9**

Photons and light waves - electrons and matter waves - the schrodinger equation (time dependent and time independent forms) - meaning of wave function - normalization - particle in a infinite potential well - normalization, probabilities and the correspondence principle.

UNIT V APPLIED QUANTUM MECHANICS **9**

The harmonic oscillator - barrier penetration and quantum tunneling - tunneling microscope - resonant diode - finite potential wells - particle in a three dimensional box - bloch's theorem for particles in a periodic potential, kronig-penney model and origin of energy bands.

TOTAL: 45 PERIODS

OUTCOME

After completion of this course, the students should able to

CO1 Understanding the importance of mechanics.

CO2 Express the knowledge of electromagnetic waves.

CO3 Know the basics of oscillations, optics and lasers.

CO4 Understanding the importance of quantum physics.

CO5 Apply quantum mechanical principles towards the formation of energy bands in crystalline materials.

TEXT BOOKS

1.D.Kleppner and R.Kolenkow. An Introduction to Mechanics. McGraw Hill Education, 2017.

2.D.Halliday, R.Resnick and J.Walker. Principles of Physics.John Wiley & Sons, 2015.

3.N.Garcia, A.Damask and S.Schwarz. Physics for Computer Science Students. Springer-Verlag, 2012.

REFERENCES

1. R.Wolfson. Essential University Physics. Volume 1 & 2. Pearson, 2016.
2. D.J.Griffiths. Introduction to Electrodynamics. Pearson Education, 2015
3. K.Thyagarajan and A.Ghatak. Lasers: Fundamentals and Applications. Springer, 2012.

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CY5151 **ENGINEERING CHEMISTRY** **L T P C**
(COMMON TO ALL BRANCHES) **3 0 03**

OBJECTIVES:

- To introduce the basic concepts of polymers, their properties and some of the important applications.
- To impart knowledge on the basic principles and preparatory methods of nanomaterials.
- To facilitate the understanding of the laws of photochemistry, photoprocesses and instrumentation & applications of spectroscopic techniques.
- To familiarize the operating principles and applications of energy conversion, its processes and storage devices.
- To inculcate sound understanding of water quality parameters and water treatment techniques.

UNIT I POLYMER CHEMISTRY **9**

Introduction: functionality-degree of polymerization. classification of polymers- natural and synthetic, thermoplastic and thermosetting. types and mechanism of polymerization: addition (free radical, cationic, anionic and living); condensation and copolymerization. properties of polymers: Tg, tacticity, molecular weight-weight average, number average and polydispersity index. Techniques of polymerization: Bulk, emulsion, solution and suspension. structure, properties and uses of: PE, PVC, PC, PTFE, PP, Nylon 6, Nylon 66, Bakelite, Epoxy; Conducting polymers – polyaniline and polypyrrole.

UNIT II NANOCHEMISTRY **9**

Basics-distinction between molecules, nanomaterials and bulk materials; size-dependent properties. Types –nanoparticle, nanocluster, nanorod, nanowire and nanotube. Preparation of nanomaterials: sol-gel, solvothermal, laser ablation, chemical vapour deposition, electrochemical deposition and electro spinning. Characterization - Scanning Electron Microscope and Transmission Electron Microscope - Principle and instrumentation (block diagram). Properties (optical, electrical, mechanical and magnetic) and Applications of nanomaterials - medicine, agriculture, electronics and catalysis.

UNIT III PHOTOCHEMISTRY AND SPECTROSCOPY **9**

Photochemistry: Laws of photochemistry - Grotthuss-Draper law, Stark-Einstein law and Lambert-Beer Law (derivation and problems). Photo physical processes – Jablonski diagram. Chemiluminescence, photo-sensitization and photoquenching – mechanism and examples. Spectroscopy: Electromagnetic spectrum - absorption of radiation - electronic, vibrational and rotational transitions. Width and intensities of spectral lines.Atomic absorption spectroscopy, UV-Vis and IR spectroscopy- principles, instrumentation (Block diagram) and applications.

UNIT IV ENERGY CONVERSIONS AND STORAGE **9**

Nuclear fission - controlled nuclear fission - nuclear fusion - differences between nuclear fission and fusion - nuclear chain reactions - nuclear energy - light water nuclear power plant – fast breeder reactor.Solar energy conversion - solar cells. Wind energy. Batteries - types of batteries – primary battery (dry cell), secondary battery (lead acid, nickel-cadmium and lithium-ion-battery). Fuel cells – H_2-O_2 and microbial fuel cell. Explosives – classification, examples: TNT, RDX, Dynamite; Rocket fuels and propellants – definition and uses.

UNIT V WATER TECHNOLOGY **9**

Water – sources and impurities – water quality parameters: colour, odour, pH, hardness, alkalinity, TDS, COD and BOD. Boiler feed water – requirement – troubles (scale & sludge, caustic embrittlement, boiler corrosion and priming & foaming. Internal conditioning – phosphate, calgon and carbonate treatment. External conditioning - zeolite (permutit) and ion exchange demineralization. Municipal water treatment process – primary (screening, sedimentation and coagulation), secondary (activated sludge process and trickling filter process) and tertiary (ozonolysis, UV treatment, chlorination, reverse osmosis).

Attested

TOTAL: 45 PERIODS

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OUTCOMES:

CO1: To recognize and apply basic knowledge on different types of polymeric materials, their general preparation methods and applications to futuristic material fabrication needs.

CO2: To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.

CO3: To identify and apply suitable spectroscopic technique for material analysis and study different forms of photochemical reactions.

CO4: To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

CO5: To demonstrate the knowledge of water and their quality in using at different industries.

TEXT BOOKS:

1. Jain P. C. & Monica Jain., "Engineering Chemistry", 16th Edition, Dhanpat Rai Publishing Company (P) Ltd, New Delhi, 2015.
2. Sivasankar B., "Engineering Chemistry", Tata McGraw-Hill Publishing Company Ltd, New Delhi, 2012.
3. S.S.Dara, "A text book of Engineering Chemistry", Chand Publications, 2014.

REFERENCE BOOKS:

1. Schdeva M V, "Basics of Nano Chemistry", Anmol Publications Pvt Ltd
2. B.Sivasankar, "Instrumental Methods of Analysis", Oxford University Press. 2012.
3. Friedrich Emich, "Engineering Chemistry", Scientific International Ltd.
4. V RGowariker, N V Viswanathan and Jayadev Sreedhar, "Polymer Science" New AGE International Publishers, 2009.

GE5151 **ENGINEERING GRAPHICS** **L T P C**
1 0 4 3

COURSE OBJECTIVES: The main learning objective of this course is to prepare the students for:

1. Drawing free hand sketches of basic geometrical shapes and multiple views of objects.
2. Drawing orthographic projections of lines and planes.
3. Drawing orthographic projections of solids.
4. Drawing development of the surfaces of objects.
5. Drawing isometric and perspective views of simple solids.

CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION) **1**

Importance of graphics in engineering applications – use of drafting instruments – bis conventions and specifications – size, layout and folding of drawing sheets – lettering and dimensioning.

UNITI PLANE CURVES AND FREE HANDSKETCHING **14**

Basic geometrical constructions, curves used in engineering practices-conics – construction of ellipse, parabola and hyperbola by different methods – construction of cycloid – construction of involutes of square and circle – drawing of tangents and normal to the above curves. Visualization concepts and free hand sketching: visualization principles – representation of three-dimensional objects – layout of views- free hand sketching of multiple views from pictorial views of objects

UNITII PROJECTION OF POINTS, LINES AND PLANE SURFACES **15**

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

UNITIII PROJECTION OF SOLIDS **15**

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

UNIT IV PROJECTION OFSECTIONED SOLIDS AND DEVELOPMENT OF SURFACES **15**

Sectioning of solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – prisms, pyramids cylinders and cones. Development of lateral surfaces of solids with cut-outs and holes.

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS **12**

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

COMPUTER AIDED DRAFTING (DEMONSTRATION ONLY) **3**

Introduction to drafting packages and demonstration of their use

TOTAL (L: 15 + P: 60)=75 PERIODS

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

CO1. Draw free hand sketching of basic geometrical shapes and multiple views of objects.
CO2. Draw orthographic projections of lines and planes
CO3. Draw orthographic projections of solids
CO4. Draw development of the surfaces of objects
CO5. Draw isometric and perspective views of simple solids.

TEXT BOOKS:

1. Bhatt, N. D.,Panchal V M and Pramod R. Ingle, "Engineering Drawing", Charotar Publishing House, 53rd Edition, 2014.
2. Parthasarathy, N. S. and Vela Murali, "Engineering Drawing", Oxford University Press, 2015

REFERENCES:

1. Agrawal, B. and Agrawal C.M., "Engineering Drawing", Tata McGraw, N.Delhi, 2008.
2. Gopalakrishna, K. R., "Engineering Drawing", Subhas Stores, Bangalore, 2007.
3. Natarajan, K. V., "A text book of Engineering Graphics", 28thEd., Dhanalakshmi Publishers, Chennai, 2015.
4. Shah, M. B., and Rana, B. C., "Engineering Drawing", Pearson, 2ndEd., 2009.
5. Venugopal, K. and Prabhu Raja, V., "Engineering Graphics", New Age,2008.

Publication of Bureau of Indian Standards:

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

Special points applicable to University Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only.
4. The students will be permitted to use appropriate scale to fit solution within A3 size.
5. The examination will be conducted in appropriate sessions on the same day.

BS5161	BASIC SCIENCES LABORATORY (Common to all branches of B.E. / B.Tech.Programmes)	L T P C 0 0 4 2

PHYSICS LABORATORY: (Any Seven Experiments)

OBJECTIVE

- To inculcate experimental skills to test basic understanding of physics of materials including properties of matter, thermal and optical properties.
- To induce the students to familiarize with experimental determination of velocity of ultrasonic waves and band gap determination.

LIST OF EXPERIMENTS:

1. Torsional pendulum - Determination of rigidity modulus of wire and moment of inertia of disc
2. Non-uniform bending - Determination of young's modulus
3. Uniform bending – Determination of young's modulus
4. Lee's disc Determination of thermal conductivity of a bad conductor
5. Potentiometer-Determination of thermo e.m.f of a thermocouple
6. Laser- Determination of the wave length of the laser using grating
7. Air wedge - Determination of thickness of a thin sheet/wire
8. a) Optical fibre -Determination of Numerical Aperture and acceptance angle
   b) Compact disc- Determination of width of the groove using laser.
9. Acoustic grating- Determination of velocity of ultrasonic waves in liquids.
10. Ultrasonic interferometer – determination of the velocity of sound and compressibility of liquids
11. Post office box -Determination of Band gap of a semiconductor.
12. Spectrometer- Determination of wavelength using gating.
13. Photoelectric effect
14. Michelson Interferometer.
15. Estimation of laser parameters.
16. Melde's string experiment

TOTAL: 30 PERIODS

OUTCOME

Upon completion of the course, the students will be able

CO1. To determine various moduli of elasticity and
CO2. To determine various thermal and optical properties of materials.
CO3. To determine the velocity of ultrasonic waves,
CO4. To determine band gap determination
CO5. To determineviscosity of liquids.

CHEMISTRY LABORATORY: (Minimum of 8 experiments to be conducted)

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 polymers by spectroscopy and viscometry methods.

LIST OF EXPERIMENTS:

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

TOTAL: 30 PERIODS

OUTCOMES:

- To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.
- To determine the amount of metal ions through volumetric and spectroscopic techniques
- To determine the molecular weight of polymers by viscometric method.
- To quantitatively analyse the impurities in solution by electroanalytical techniques
- To design and analyse the kinetics of reactions and corrosion of metals

TEXTBOOKS:

1. Laboratory Manual- Department of Chemistry, CEGC, Anna University (2014).
2. Vogel"s Textbook of Quantitative Chemical Analysis (8^{th} edition, 2014).

GE5162 **WORKSHOP PRACTICES LABORATORY** **L T P C**
(Common to all Branches of B.E. / B.Tech. Programmes) **0 0 4 2**

COURSE OBJECTIVES: The main learning objective of this course is to provide hands on training to the students in:

1. Drawing pipe line plan; laying and connecting various pipe fittings used in common household plumbing work; Sawing; planing; making joints in wood materials used in common household wood work.
2. Wiring various electrical joints in common household electrical wire work.
3. 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.
4. Soldering and testing simple electronic circuits; Assembling and testing simple electronic components on PCB.

GROUP – A (CIVIL & ELECTRICAL)

PART I CIVIL ENGINEERING PRACTICES 15

PLUMBING WORK:

a) Connecting various basic pipe fittings like valves, taps, coupling, unions, reducers, elbows and other components which are commonly used in household.
b) Preparing plumbing line sketches.
c) Laying pipe connection to the suction side of a pump
d) Laying pipe connection to the delivery side of a pump.
e) Connecting pipes of different materials: Metal, plastic and flexible pipes used in household appliances.

WOOD WORK:

a) Sawing,
b) Planning and
c) Making joints like T-Joint, Mortise joint and Tenon joint and Dovetail joint.

Wood Work Study:

a) Studying joints in door panels and wooden furniture
b) Studying common industrial trusses using models.

PART II ELECTRICAL ENGINEERING PRACTICES 15

WIRING WORK:

a) Wiring Switches, Fuse, Indicator and Lamp etc. such as in basic household,
b) Wiring Stair case light.
c) Wiring tube – light.
d) Preparing wiring diagrams for a given situation.

Wiring Study:

a) Studying an Iron-Box wiring.
b) Studying a Fan Regulator wiring.
c) Studying an Emergency Lamp wiring.

GROUP – B (MECHANICAL AND ELECTRONICS)

PART III MECHANICAL ENGINEERING PRACTICES 15

WELDING WORK:

a) Welding of Butt Joints, Lap Joints, and Tee Joints using arc welding.
b) Practicing gas welding.

BASIC MACHINING WORK:

a) (simple)Turning.
b) (simple)Drilling.
c) (simple)Tapping.

ASSEMBLY WORK:

a) Assembling a centrifugal pump.
b) Assembling a household mixer.
c) Assembling an air conditioner.

SHEET METAL WORK:

a) Making of a square tray

FOUNDRY WORK:

a) Demonstrating basic foundry operations.

PART IV ELECTRONIC ENGINEERING PRACTICES 15

SOLDERING WORK:

a) Soldering simple electronic circuits and checking continuity.

ELECTRONIC ASSEMBLY AND TESTING WORK:

a) Assembling and testing electronic components on a small PCB.

ELECTRONIC EQUIPMENT STUDY:

a) Studying a FM radio.
b) Studying an electronic telephone.

TOTAL (P: 60) = 60 PERIODS

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
CO4. Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
CO5. Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

SEMESTER II

HS5251	**PROFESSIONAL COMMUNUCATION**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**

COURSE OBJECTIVES

The course entitles 'professional communication' aims to,

- Improve the relevant language skills necessary for professional communication.
- Develop linguistic and strategic competence in workplace context.
- Enhance language proficiency and thereby the employability of budding engineers and technologists.

UNIT I TECHNICAL COMMUNICATION 12

Listening: listening to telephone conversations (intent of the speaker and note taking exercises)- speaking: role play exercises based on workplace contexts, introducing oneself- reading: reading the interview of an achiever and completing exercises (skimming, scanning and predicting)- writing: writing a short biography of an achiever based on given hints- grammar: asking and answering questions, punctuation in writing, prepositional phrases- vocabulary development: use of adjectives.

UNIT II SUMMARY WRITING 12

Listening: listening to talks/lectures both general and technical and summarizing the main points- speaking: participating in debates- reading: reading technical essays/ articles and answering comprehension questions-writing: summary writing-grammar: participle forms, relative clauses- vocabulary development: use of compound words, abbreviations and acronyms.

UNIT III PROCESS DESCRIPTION 12

Listening: listening to a process description and drawing a flowchart-speaking: participating in group discussions, giving instructions- reading: reading instruction manuals- writing: writing process descriptions- writing instructions- grammar: use of imperatives, active and passive voice, sequence words- vocabulary development: technical jargon

UNIT IV REPORT WRITING 12

Listening: listening to a presentation and completing gap-filling exercises- speaking: making formal presentations- reading: reading and interpreting charts/tables and diagrams- writing: interpreting charts/tables and diagrams, writing a report- grammar: direct into indirect speech, use of phrases- vocabulary development: reporting words

UNIT V WRITING JOB APPLICATIONS 12

Listening: listening to a job interview and completing gap=filling exercises- speaking: mock interview, telephone interviews- reading: reading a job interview, sop, company profile and completing comprehension exercises- writing: job applications and resumes and sops-grammar: present perfect and continuous tenses- vocabulary development: technical vocabulary.

TOTAL :60 PERIODS

LEARNING OUTCOMES

At the end of the second semester the learners should be able to,

CO1. Read technical texts effortlessly.
CO2. Comprehend technical texts effortlessly.
CO3. Write reports of a technical kind.
CO4. Speak with confidence in interviews and
CO5. Thereby gain employability

Textbook

1. Revised Edition of 'English for Engineers and Technologists' Volume 1 published by Orient Black Swan Limited 2019.

Assessment Pattern

- Assessments will assess all the four skills through both pen and paper and computer based tests.
- Assessments can be pen and paper based, quizzes.

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MA5252	ENGINEERING MATHEMATICS – II (Common to all branches of B.E. / B.Tech. Programmes in II Semester)	L	T	P	C
		3	1	0	4

OBJECTIVES:

- To acquaint the students with the concepts of vector calculus which naturally arises in many engineering problems.
- To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property.
- To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals.
- To acquaint the students with Differential Equations which are significantly used in Engineering problems.
- To make the students appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated.

UNIT I VECTOR CALCULUS **12**

Gradient and directional derivative – divergence and curl – irrotational and solenoidal vector fields – line integral over a plane curve – surface integral - area of a curved surface - volume integral - green's theorem, stoke's theorem and gauss divergence theorem – verification and application in evaluating line, surface and volume integrals.

UNIT II ANALYTIC FUNCTION **12**

Analytic functions – necessary and sufficient conditions for analyticity - properties – harmonic conjugates – construction of analytic function - conformal mapping – mapping by functions - bilinear transformation $w = c + z,\ az,\ 1/z,\ z^2$.

UNIT III COMPLEX INTEGRATION **12**

Line integral - cauchy's integral theorem – cauchy's integral formula – taylor's and laurent's series – singularities – residues – residue theorem – application of residue theorem for evaluation of real integrals – use of circular contour and semicircular contour with no pole on real axis.

UNIT IV DIFFERENTIAL EQUATIONS **12**

Method of variation of parameters – method of undetermined coefficients – homogenous equations of euler's and legendre's type – system of simultaneous linear differential equations with constant coefficients.

UNIT V LAPLACE TRANSFORMS **12**

Existence conditions – transforms of elementary functions – transform of unit step function and unit impulse function – basic properties – shifting theorems – transforms of derivatives and integrals – initial and final value theorems – inverse transforms – convolution theorem – transform of periodic functions – application to solution of linear ordinary differential equations with constant coefficients.

TOTAL : 60 PERIODS

OUTCOMES:

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

CO1. Calculate grad, div and curl and use Gauss, Stokes and Greens theorems to simplify calculations of integrals.
CO2. Construct analytic functions and use their conformal mapping property in application problems.
CO3. Evaluate real and complex integrals using the Cauchy's integral formula and residue theorem.
CO4. Apply various methods of solving differential equation which arise in many application problems.
CO5. Apply Laplace transform methods for solving linear differential equations.

TEXTBOOKS:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2015.
2. Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, 44th Edition, New Delhi, 2017.

REFERENCES:

1. Bali N., Goyal M. and Watkins C., “Advanced Engineering Mathematics”, Firewall Media (An imprint of Lakshmi Publications Pvt., Ltd.,), 7th Edition, New Delhi, 2009.
2. Glyn James, “Advanced Modern Engineering Mathematics”, Pearson Education, 4th Edition, New Delhi, 2011.
3. Jain R.K. and Iyengar S.R.K., “Advanced Engineering Mathematics”, Narosa Publications, 5thEdition, New Delhi, 2017.
4. Peter V.O’Neil, “Advanced Engineering Mathematics”, Cengage Learning India Pvt., Ltd, 7th Edition, New Delhi, 2012.
5. Ramana B.V., “Higher Engineering Mathematics”, Tata McGraw Hill Co. Ltd., 11th Reprint, New Delhi, 2010.

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GE5153 PROBLEM SOLVING AND PYTHON PROGRAMMING L T P C
3 0 0 3

OBJECTIVES:

- To know the basics of algorithmic problem solving.
- To develop Python programs with conditionals and loops.
- To define Python functions and use function calls.
- To use Python data structures - lists, tuples, dictionaries.
- To do input/output with files in Python.

UNIT I INTRODUCTION TO COMPUTING AND PROBLEM SOLVING 9

Fundamentals of computing – computing devices – identification of computational problems – pseudocodesand flowcharts – instructions – algorithms – building blocks of algorithms – introduction to python programming – python interpreter and interactive mode – variables and identifiers – arithmetic operators– values and types – statements.

Suggested Activities:

- Developing Pseudocodes and flowcharts for real life activities such as railway ticket booking using IRCTC, admission process to undergraduate course, academic schedules during a semester etc.
- Developing algorithms for basic mathematical expressions using arithmetic operations.
- Installing Python.
- Simple programs on print statements, arithmetic operations.

Suggested Evaluation Methods:

- Assignments on pseudocodes and flowcharts.
- Tutorials on Python programs.

UNIT II CONDITIONALS AND FUNCTIONS 9

Operators – boolean values – operator precedence – expression – conditionals: if-else constructs – loop structures/iterative statements – while loop – for loop – break statement – function call and returning values – parameter passing – local and global scope – recursive functions.

Suggested Activities:

- Simple Python program implementation using Operators, Conditionals, Iterative Constructs and Functions.
- Implementation of a simple calculator.
- Developing simple applications like calendar, phone directory, to-do lists etc.
- Flow charts for GCD, Exponent Functions, Fibonacci Series using conditionals and iterative statements.
- External learning - Recursion vs. Iteration.

Suggested Evaluation Methods:

- Tutorials on the above activities.
- Group Discussion on external learning.

UNIT III SIMPLE DATA STRUCTURES IN PYTHON 10

Introduction to data structures – list – adding items to a list – finding and updating an item – nested lists – cloning lists – looping through a list – sorting a list – list concatenation – list slices – list methods – list loop – mutability – aliasing – tuples: creation, accessing, updating, deleting elements in a tuple, tuple assignment, tuple as return value, nested tuples, basic tuple operations – sets.

Suggested Activities:

- Implementing python program using lists, tuples, sets for the following scenario:
  - Simple sorting techniques
  - Student Examination Report
  - Billing Scheme during shopping.
- External learning - List vs. Tuple vs. Set – Implementing any application using all the three data structures.

Suggested Evaluation Methods:

- Tutorials on the above activities.
- Group Discussion on external learning component.

UNIT IV STRINGS, DICTIONARIES, MODULES 10

Strings: introduction, indexing, traversing, concatenating, appending, multiplying, formatting, slicing, comparing, iterating – basic built-in string functions – dictionary: creating, accessing, adding items, modifying, deleting, sorting, looping, nested dictionaries built-in dictionary function – finding key and value in a dictionary – modules – module loading and execution – packages – python standard libraries.

Suggested Activities:

- Implementing Python program by importing Time module, Math package etc.
- Creation of any package (student's choice) and importing into the application.

Suggested Evaluation Methods:

- Tutorials on the above activities.

UNIT V FILE HANDLING AND EXCEPTION HANDLING 7

Introduction to files – file path – opening and closing files – reading and writing files – file position – exception: errors and exceptions, exception handling, multiple exceptions.

Suggested Activities:

- Developing modules using Python to handle files and apply various operations on files.
- Usage of exceptions, multiple except blocks -for applications that use delimiters like age, range of numerals etc.
- Implementing Python program to open a non-existent file using exceptions.

Suggested Evaluation Methods:

- Tutorials on the above activities.
- Case Studies.

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1. Develop algorithmic solutions to simple computational problems.
CO2. Develop and execute simple Python programs.
CO3. Write simple Python programs for solving problems and 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.

TEXT BOOK:

1. Reema Thareja, "Python Programming using Problem Solving Approach", Oxford University Press, 2017.
2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Second Edition, Shroff/O'Reilly Publishers, 2016. (http://greenteapress.com/wp/thinkpython/).

REFERENCES:

1. Guido van Rossum, Fred L. Drake Jr., "An Introduction to Python – Revised and Updated for Python 3.2", Network Theory Ltd., 2011.
2. John V Guttag, "Introduction to Computation and Programming Using Python", Revised and Expanded Edition, MIT Press , 2013
3. Charles Dierbach, "Introduction to Computer Science using Python", Wiley India Edition, 2016.
4. Timothy A. Budd, "Exploring Python", Mc-Graw Hill Education (India) Private Ltd., 2015.
5. Kenneth A. Lambert, "Fundamentals of Python: First Programs", Cengage Learning, 2012.

EE5251 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING **L T P C**
3 0 0 3

OBJECTIVES:

- To understand the basic concepts of electric circuits, magnetic circuits and wiring.
- To understand the operation of AC and DC machines.
- To understand the working principle of electronic devices and circuits.

UNIT I BASIC CIRCUITS AND DOMESTIC WIRING 9

Electrical circuit elements (r, l and c)-dependent and independent sources – ohm's law- kirchhoff's laws - mesh current and node voltage methods (analysis with only independent source) - phasors – rms-average values-sinusoidal steady state response of simple rlc circuits. Types of wiring-domestic wiring - specification of wires-earthing-methods-protective devices.

UNIT II THREE PHASE CIRCUITS AND MAGNETIC CIRCUITS 9

Three phase supply – star connection – delta connection –balanced and unbalanced loads- power in three-phase systems – comparison of star and delta connections – advantages-magnetic circuits-definitions-mmf, flux, reluctance, magnetic field intensity, flux density, fringing, self and mutual inductances-simple problems.

UNIT III ELECTRICAL MACHINES 9

Working principle of dc generator, motor-emf and torque equation-types –shunt, series and compound-applications.Working principle of transformer-emf equation-operating principles of three phase and single phase induction motor-applications.Working principles of alternator-emf equation-operating principles of synchronous motor, stepper motor-applications.

UNIT IV BASICS OF ELECTRONICS 9

Intrinsic semiconductors, extrinsic semiconductors – p-type and n-type, p-n junction, vi characteristics of pn junction diode, zener effect, zener diode, zener diode characteristics-rectifier circuits-wave shaping.

UNIT V CURRENT CONTROLLED AND VOLTAGE CONTROLLED DEVICES 9

Working principle and characteristics - BJT, SCR, JFET, MOSFET.

TOTAL: 45 PERIODS

OUTCOMES:

CO1 To be able to understand the concepts related with electrical circuits and wiring.
CO2 To be able to study the different three phase connections and the concepts of magnetic circuits.
CO3 Capable of understanding the operating principle of AC and DC machines.
CO4 To be able to understand the working principle of electronic devices such as diode and zener diode.
CO 5 To be able to understand the characteristics and working of current controlled and voltage controlled devices.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓	✓	✓							
CO2	✓	✓	✓	✓	✓						✓	
CO3	✓	✓	✓	✓	✓						✓	✓
CO4	✓	✓	✓	✓	✓						✓	✓
CO5	✓		✓	✓	✓						✓	✓

TEXT BOOKS:

1. Kothari DP and I.J Nagrath, "Basic Electrical and Electronics Engineering", McGraw Hill Education, 2014

2. Del Toro, “Electrical Engineering Fundamentals”, Second edition, Pearson Education, New Delhi, 1989.
3. John Bird, “Electrical Circuit theory and technology”, Routledge; 5th edition, 2013

REFERENCES:

1. Thomas L. Floyd, ‘Electronic Devices’, 10th Edition, Pearson Education, 2018.
2. Albert Malvino, David Bates, ‘Electronic Principles, McGraw Hill Education; 7th edition, 2017
3. Kothari DP and I.J Nagrath, “Basic Electrical Engineering”, McGraw Hill, 2010.
4. Muhammad H.Rashid, “Spice for Circuits and electronics”, 4thed.,Cengage India,2019.

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GE5152 **ENGINEERING MECHANICS** **L T P C**
3 1 0 4

COURSE OBJECTIVES: The main learning objective of this course is to prepare the students for:

1. Applying the various methods to determine the resultant forces and its equilibrium acting on a particle in 2D and 3D.
2. Applying the concept of reaction forces (non-concurrent coplanar and noncoplanar forces) and moment of various support systems with rigid bodies in 2D and 3D in equilibrium. Reducing the force, moment, and couple to an equivalent force - couple system acting on rigid bodies in 2D and 3D.
3. Applying the concepts of locating centroids/center of gravity of various sections / volumes and to find out area moments of inertia for the sections and mass moment of inertia of solids.
4. Applying the concepts of frictional forces at the contact surfaces of various engineering systems.
5. Applying the various methods of evaluating kinetic and kinematic parameters of the rigid bodies subjected to concurrent coplanar forces.

UNIT I STATICS OF PARTICLES (9+3)

Fundamental concepts and principles, systems of units, method of problem solutions, statics of particles -forces in a plane, resultant of forces, resolution of a force into components, rectangular components of a force, unit vectors. Equilibrium of a particle- newton's first law of motion, space and free-body diagrams, forces in space, equilibrium of a particle in space.

UNITII EQUILIBRIUM OF RIGID BODIES (9+3)

Principle of transmissibility, equivalent forces, vector product of two vectors, moment of a force about a point, varignon's theorem, rectangular components of the moment of a force, scalar product of two vectors, mixed triple product of three vectors, moment of a force about an axis, couple - moment of a couple, equivalent couples, addition of couples, resolution of a given force into a force -couple system, further reduction of a system of forces, equilibrium in two and three dimensions - reactions at supports and connections.

UNITIII DISTRIBUTED FORCES (9+3)

Centroids of lines and areas – symmetrical and unsymmetrical shapes, determination of centroids by integration , theorems of pappus-guldinus, distributed loads on beams, centre of gravity of a three-dimensional body, centroid of a volume, composite bodies , determination of centroids of volumes by integration.

Moments of inertia of areas and mass - determination of the moment of inertia of an area by integration , polar moment of inertia , radius of gyration of an area , parallel-axis theorem , moments of inertia of composite areas, moments of inertia of a mass - moments of inertia of thin plates , determination of the moment of inertia of a three-dimensional body by integration

UNIT IV FRICTION (9+3)

The laws of dry friction. Coefficients of friction, angles of friction, wedges, wheel friction. Rolling resistance, ladder friction.

UNITV DYNAMICS OF PARTICLES (9+3)

Kinematics - rectilinear motion and curvilinear motion of particles. Kinetics- newton's second law of motion -equations of motions, dynamic equilibrium, energy and momentum methods - work of a force , kinetic energy of a particle, principle of work and energy, principle of impulse and momentum, impact, method of virtual work - work of a force, potential energy, potential energy and equilibrium.

TOTAL (L: 45 + T: 15)=60 PERIODS

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

CO1. Apply the various methods to determine the resultant forces and its equilibrium acting on a particle in 2D and 3D.
CO2. Apply the concept of reaction forces (non-concurrent coplanar and noncoplanar forces) and moment of various support systems with rigid bodies in 2D and 3D in equilibrium. Reducing the force, moment, and couple to an equivalent force - couple system acting on rigid bodies in 2D and 3D.
CO3. Apply the concepts of locating centroids / center of gravity of various sections / volumes and to find out area moments of inertia for the sections and mass moment of inertia of solids.
CO4. Apply the concepts of frictional forces at the contact surfaces of various engineering systems.
CO5. Apply the various methods of evaluating kinetic and kinematic parameters of the rigid bodies subjected to concurrent coplanar forces.

TEXT BOOKS:

1. Beer Ferdinand P, Russel Johnston Jr., David F Mazurek, Philip J Cornwell, SanjeevSanghi, Vector Mechanics for Engineers: Statics and Dynamics, McGraw Higher Education., 11th Edition, 2017.
2. Vela Murali, "Engineering Mechanics-Statics and Dynamics", Oxford University Press, 2018.

REFERENCES:

1. Boresi P and Schmidt J, Engineering Mechanics: Statics and Dynamics, 1/e, Cengage learning, 2008.
2. Hibbeller, R.C., Engineering Mechanics: Statics, and Engineering Mechanics: Dynamics, 13th edition, Prentice Hall, 2013.
3. Irving H. Shames, Krishna Mohana Rao G, Engineering Mechanics – Statics and Dynamics, 4thEdition, Pearson Education Asia Pvt. Ltd., 2005.
4. Meriam J L and Kraige L G, Engineering Mechanics: Statics and Engineering Mechanics: Dynamics, 7th edition, Wiley student edition, 2013.
5. Timoshenko S, Young D H, Rao J V and Sukumar Pati, Engineering Mechanics, 5thEdition, McGraw Hill Higher Education, 2013.

CY5251 CHEMISTRY FOR TECHNOLOGISTS

L	T	P	C
3	0	0	3

OBJECTIVE

- The students will be imparted the knowledge on
- Boiler feed water requirements, water treatment techniques,
- Applications of oil and its properties, principles of different chemical analysis
- Different kinds of preparations of important chemicals.

UNIT I WATER TECHNOLOGY 9

Water quality parameters- hardness -definition - units of hardness - determination of hardness (EDTA method).Alkalinity - definition - determination of alkalinity.TDS, BOD, COD and iron and their significance. Softening – zeolite and demineralization processes. Boiler troubles (scale, sludge, boiler corrosion, caustic embrittlement and carry over) and remedies – removal of oils and silica, internal conditioning.Desalination by electro-dialysis and reverse osmosis.

UNIT II OILS,FATS,SOAPS&LUBRICANTS 9

Chemical constitution, chemical analysis of oils and fats – free acid, saponification and iodine values, definitions, determinations and significance.Soaps and detergents - cleaning action of soap. Lubricants - definition, characteristics, types and properties – viscosity, viscosity index, carbon residue, oxidation stability, flash and fire points, cloud and pour points, aniline point. Solid lubricants – graphite and molybdenum disulphide.

UNIT III CHEMICAL ANALYSIS – AN ANALYTICAL INSIGHT 9

Gravimetric analysis – principles – method – applications.redox titrations – principle – method – applications. Thin layer chromatography – principles – techniques – applications. Principles underlying the estimations of nitrogen in nitrogeneous fertilizers, phenol and aniline.

UNIT IV DYE CHEMISTRY 9

Witt's theory and modern theory of colors – synthesis of methyl red, methyl orange, congo red, malachite green, p-rosaniline, phenolphthalein, fluorescence, eosin dyes.

UNIT V CHEMICALS AND AUXILIARIES 9

Preparations of bleaching powder, sodium hypochlorite, hydrogen peroxide, chlorine dioxide – estimation of available chlorine in hypochlorite – determination of strength of hydrogen peroxide.

TOTAL PERIODS: 45

OUTCOME

CO1. Will be familiar with boiler feed water requirements, water treatment techniques.
CO2. Will know the oil and its properties, principles of different chemical analysis.
CO3. Will know the preparations of important chemicals.
CO4. Will understand chemistry of dyes
CO5. Will understand the auxiliaries required for dyeing

TEXT BOOKS

1. Jain & Jain, "Engineering Chemistry", 16th Edition, 2014,DhanpatRai Publishing Company, New Delhi.
2. Sharma B.K, "Industrial Chemistry", 16th Edition, 2014, GOEL Publishing House, n Meerut.

REFERENCE BOOKS

1. Dara SS, Umare SS, "A Textbook of Engineering Chemistry", S. Chand & Company Ltd., New Delhi, 2010.
2. Puri BR, Sharma LR, Pathania S, "Principles of Physical Chemistry", 42nd Edition, 2008, Vishal Publishing Co., Jalandhar.
3. Morrison RT, Boyd RN, Bhattacharjee SK, "Organic Chemistry", 7th Edition, Pearson India, 2011

GE5161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY L T P C
0 0 4 2

OBJECTIVES:

- To understand the problem solving approaches.
- To learn the basic programming constructs in Python.
- To articulate where computing strategies support in providing Python-based solutions to real world problems.
- To use Python data structures - lists, tuples, dictionaries.
- To do input/output with files in Python.

EXPERIMENTS:

1. Identification and solving of simple real life or scientific or technical problems, and developing flow charts for the same.
2. Python programming using simple statements and expressions.
3. Scientific problems using Conditionals and Iterative loops.
4. Implementing real-time/technical applications using Lists, Tuples.
5. Implementing real-time/technical applications using Sets, Dictionaries.
6. Implementing programs using Functions.
7. Implementing programs using Strings.
8. Implementing programs using written modules and Python Standard Libraries.
9. Implementing real-time/technical applications using File handling.
10. Implementing real-time/technical applications using Exception handling.
11. Exploring Pygame tool.
12. Developing a game activity using Pygame like bouncing ball, car race etc.

TOTAL: 60 PERIODS

OUTCOMES:

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

- Develop algorithmic solutions to simple computational problems
- Develop and execute simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python data structures.

Apply Python features in developing software applications.

EE5261 ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

L	T	P	C
0	0	4	2

OBJECTIVES

1. To impart hands on experience in verification of circuit laws and measurement of circuit parameters
2. To train the students in performing various tests on electrical motors.
3. It also gives practical exposure to the usage of CRO, power sources & function generators

List of Experiments

1. Verification of Kirchhoff's Law.
2. Steady state response of AC and DC circuits (Mesh, Node Analysis)
3. Frequency response of RLC circuits.
4. Measurement power in three phase circuits by two-watt meter method.
5. Regulation of single phase transformer.
6. Performance characteristics of DC shunt generator.
7. Performance characteristics of single phase induction motor.
8. Characteristics of PN diode and Zener diode
9. Characteristics of Zener diode
10. Half wave and full wave Rectifiers
11. Application of Zener diode as shunt regulator.
12. Characteristics of BJT and JFET

TOTAL: 60 PERIODS

OUTCOMES:

1. To become familiar with the basic circuit components and know how to connect them to make a real electrical circuit;
2. Ability to perform speed characteristic of different electrical machines
3. Ability to use logic gates and Flip flop

SEMESTER III

MA5354 PROBABILITY AND STATISTICS L T P C
3 1 0 4

OBJECTIVES

- To understand the basics of random variables with emphasis on the standard discrete and continuous distributions.
- To understand the basic probability concepts with respect to two dimensional random variables along with the relationship between the random variables and the significance of the Central Limit theorem.
- To apply the small/ large sample tests through Tests of hypothesis.
- To understand the concept of analysis of variance and use it to investigate factorial dependence.
- To monitor a process and detect a situation when the process is out of control.
-

UNIT I RANDOM VARIABLES 12

Discrete and continuous random variables – moments – moment generating functions – binomial, poisson, geometric, uniform, exponential, gamma, weibull and normal distributions – functions of a random variable.

UNIT II TWO-DIMENSIONAL RANDOM VARIABLES 12

Joint distributions – marginal and conditional distributions – covariance – correlation and linear regression – transformation of random variables – central limit theorem (for independent and identically distributed random variables).

UNIT III TESTS OF SIGNIFICANCE 12

Type I and Type II errors – tests for single mean, proportion, 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 – non-parametric tests: test for randomness and rank – sum test (wilcoxon test).

UNIT IV DESIGN OF EXPERIMENTS 12

Completely randomized design – randomized block design – latin square design – factorial design – taguchi's robust parameter design.

UNIT V STATISTICAL QUALITY CONTROL 12

Control charts for measurements ($\bar{X}$ and R charts) – control charts for attributes (p, c and np charts) tolerance limits – acceptance sampling.

TOTAL: 60 PERIODS

OUTCOMES

CO1 To analyze the performance in terms of probabilities and distributions achieved by the determined solutions

CO2 To be familiar with some of the commonly encountered two dimensional random variables and be equipped for a possible extension to multivariate analysis

CO3 To apply the basic principles underlying statistical inference(estimation and hypothesis testing)

CO4 To demonstrate the knowledge of applicable large sample theory of estimators and tests

CO5 To obtain a better understanding of the importance of the methods in modern industrial processes.

TEXT BOOKS:

1. Devore, J.L. "Probability and Statistics for Engineering and the Sciences", Cengage Learning, 9th Edition, Boston, 2017.
2. Johnson, R.A. and Gupta, C.B. "Miller and Freund's Probability and Statistics for Engineers", Pearson India Education, Asia, 9th Edition, New Delhi, 2017.

3. Walpole, R.E., Myers R.H., Myres S.L., and Ye, K. “Probability and Statistics for Engineers and Scientists”, Pearson Education, Asia, 9th Edition, New Delhi, 2011.

REFERENCES:

1. Krishnaiah, K. and Shahabudeen, P. “Applied Design of Experiments and Taguchi Methods”, Prentice Hall of India, New Delhi, 2012.
2. Milton, J.S. and Arnold, J.C. “Introduction to Probability and Statistics”, Tata McGraw Hill, 4th Edition, 3rd Reprint, New Delhi, 2008.
3. Ross, S.M. “Introduction to Probability and Statistics for Engineers and Scientists”, Elsevier, 5th Edition, New Delhi, 2014.
4. Spiegel, M.R., Schiller, J., Srinivasan, R.A. and Goswami, D., “Schaum’s Outline of Theory and Problems for Probability and Statistics”, McGraw Hill Education, 3rd Edition, Reprint, New Delhi, 2017.

AT5301 TECHNOLOGY OF SPINNING AND WEAVING L T P C
3 0 0 3

OBJECTIVE:

To enable the students to understand different types of yarns, basics of production, yarn numbering system and understand the process of weaving

UNIT I YARN SPINNING 9

Filament yarn, spun yarn; characteristics of fibres used for spinning; sequence of machines used for production of spun yarn using short staple spinning system; objectives of ginning, spinning preparatory and spinning machine

UNIT II YARN TYPES 9

Numbering system for yarns- tex, denier and english count; specifications of yarn and their significance; carded yarn, combed yarn, compact spun yarn, rotor spun yarn, airjet spun yarn – structure and characteristics, comparison, applications; blended yarns; multiply and fancy yarns

UNIT III PREPARATORY FOR WEAVING 9

Purpose and types of winding machines; clearing of yarn faults; warping and sectional warping; sizing, drawing-in and denting

UNIT IV WEAVING 9

Types of looms – handloom, power loom, automatic looms; primary, secondary and auxiliary motions of a loom; basic principles of shedding- tappet, dobby and jacquard; multi shuttle looms; terry looms

UNIT V SHUTTLELESS WEAVING 9

Basic concepts of shuttle less looms – rapier, projectile, water jet and air jet looms; yarn requirements, salient features; multi-phase weaving; analysis of fabric defects

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall understand

CO1 Process sequence for producing different types of yarns
CO2 Yarn numbering systems, different types of yarns, their structure and properties
CO3 Preparatory processes for weaving
CO4 Principle of weaving
CO5 Weaving by shuttleless looms

TEXT BOOKS:

1. Klein W., "The Technology of Short-staple Spinning", The Textile Institute, Manchester,1998.
2. Oxtoby E., “Spun Yarn Technology”, Butterworth, London, 1987, ISBN: 0408014644 /ISBN- 13: 9780408014649.
3. Talukdar M.K., Sriramulu P.K. and Ajgaonkar D.B., “Weaving: Machines, Mechanisms, Management”, Mahajan Publishers, Ahmedabad, 1998, ISBN: 81-85401-16-0
4. Marks R. and Robinson T.C., “Principles of Weaving”, The Textile Institute, Manchester, 1989, ISBN: 0 900739 258

REFERENCES:

1. Lord P. R., “Yarn Production: Science, Technology and Economics”, The Textile Institute,Manchester, 2003, ISBN: 1855736969 | ISBN-13: 9781855736962
2. PR. Lord and Mohammed, “Weaving: Conversion of yarn to fabric”, M.H.Merrine Publishing Co. Ltd., VK, 1998.

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Course Articulation Matrix:

Course Outcomes	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Process sequence for producing different types of yarns	2	3	2	3	–	–	-	3	3	2	3	2	2	3	3
CO2	Yarn numbering systems, different types of yarns, their structure and properties	2	2	2	2	–	–	-	2	2	3	2	3	2	3	3
CO3	Preparatory processes for weaving	3	3	3	3	–	–	-	3	–	3	3	2	3	3	3
CO4	Principle of weaving	2	3	2	3	–	–	-	3	2	3	3	3	3	3	3
CO5	Weaving by shuttle less looms	3	3	3	3	–	–	-	3	2	3	2	3	3	3	3
Overall CO		3	3	3	3	-	–	-	3	3	3	3	2	3	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5351 **CHARACTERISTICS OF TEXTILE FIBRES** **L T P C**
3 0 0 3

OBJECTIVES:

To enable the students to understand the

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

UNITI STRUCTURE OF FIBRES 9

Definition of fibre - staple fibre, filament; classification of fibres; essential and desirable properties of textile fibres; concepts of molecular weight, degree of polymerization, orientation and crystallinity; characteristics of fibre forming polymer, study of morphological structures of fibers

UNIT II MOISTURE ABSORPTION CHARACTERISTICS 9

Theories of moisture sorption, desorption and relations; moisture absorption behavior of natural and man-made fibres; methods of measurement of moisture absorption behavior; factors influencing the moisture absorption behavior; conditioning of mass of fibres – mechanism of conditioning and factors influencing the conditioning process; moisture diffusion in fibres; heat of sorption – integral and differential, their relation; factors influencing heat of sorption, measurement of heat ofsorption

UNIT III TENSILE AND ELONGATION CHARACTERISTICSOFFIBRES 9

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

UNIT IV OPTICAL,FRICTIONALANDTHERMALCHARACTERISTICS 9

Reflexion and lustre- objective and subjective methods of measurement; refractive index and its measurement; birefringence, factors influencing birefringence; absorption and dichroism; friction – static, limiting and kinetic friction, its measurement, comparison of fibres, directional friction in wool; thermal transitions of fibres –Tg and melting; static electricity in textile fibres

UNIT V STRUCTURE INVESTIGATION TECHNIQUES 9

Analysis of surface morphology, structural morphology; principles of various techniques of structural characterization of fibres; determination of crystallinity of fibres, end group analysis for various fibres; determination of orientation of various fibres by various techniques.

TOTAL:45PERIODS

OUTCOMES:

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

CO1 Types of fibres and their structure
CO2 Moisture and absorption characteristics of fibres
CO3 Tensile and elongation properties of fibres
CO4 Thermal and other characteristics of fibres
CO5 Method of investigation of structure of fibres

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TEXTBOOKS:

1. MortonW.E.,andHearleJ.W.S.,“PhysicalPropertiesofTextileFibres”,TheTextileInstitute, Washington D.C., 2008, ISBN978-1-84569-220-95
2. Meredith R., and Hearle J. W. S., “Physical Methods of Investigation of Textiles”, Wiley Publication, New York, 1989, ISBN: B00JCV6ZWU |ISBN-13:
3. Mukhopadhyay S. K., “Advances in Fibre Science”, The Textile Institute,1992, ISBN: 1870812379

REFERENCES:

1. MeredithR.,“MechanicalPropertiesofTextileFibres”,NorthHolland,Amsterdam,1986ISBN: 1114790699, ISBN-13:9781114790698
2. HearleJ.W.S.,LomasB. AndCookeW.D.,“AtlasofFibreFractureandDamagetoTextiles”, The Textile Institute, 2nd Edition, 1998, ISBN:1855733196
3. RaheelM. (ed.)., “Modern Textile Characterization Methods”, Marcel Dekker, 1995, ISBN:0824794737
4. Mukhopadhyay. S. K., “The Structure and Properties of Typical Melt Spun Fibres”, Textile Progress, Vol. 18, No. 4, Textile Institute, 1989, ISBN:1870812115
5. Hearle J.W.S., “Polymers and Their Properties : Fundamentals of Structures and Mechanics Vol1”,EllisHorwood,England,1982,ISBN:047027302X|ISBN-13:9780470273029
6. Greaves. P. H., and Saville B.P., “Microscopy of Textile Fibres”, Bios Scientific, U.K., 1995, ISBN: 1872748244 | ISBN-13:9781872748245
7. Seville. B. P., “Physical Testing of Textiles”, Woodhead Publishing, 1999,ISBN: 1855733676 | ISBN-13:9781855733671
8. Hearle J. W. S., and Peters. R. H., “Fibre structure”, Elsevier Ltd, 1963, ISBN: 1483212211 | ISBN-13:9781483212210

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Course Articulation Matrix:

Course Outcomes	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Types of fibres and their structure	2	3	2	3	2	-	-	-	-	3	3	-	2	3	3
CO2	Moisture and absorption characteristics of fibres	2	2	2	3	2	-	-	-	-	3	2	-	2	3	3
CO3	Tensile and elongation properties of fibres	3	3	3	3	2	-	-	-	-	3	3	-	3	3	3
CO4	Thermal and other characteristics of fibres	2	3	2	3	2	-	-	-	-	3	3	-	3	3	3
CO5	Method of investigation of structure of fibres	3	3	3	3	2	-	-	-	-	3	2	-	3	3	3
Overall CO		3	3	3	3	2	-	-	-	-	3	3	-	3	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5302	FUNDAMENTALS OF FASHION AND SEWING	L T P C 2 0 2 3

OBJECTIVES:

- To impart knowledge on elements and principles of design
- To enable the students to understand colour theories, fashion concepts, fashion forecast and portfolio development.
- To understand sewing machine components and practice the basic sewing in the laboratory

UNIT I **6**

Design types – natural, stylized, geometric, historic and abstract; design of garment – structural, decorative and functional; elements of design – line, shape, form, size, colour, texture and pattern; introducing elements of design in garment development.

UNIT II **6**

Principles of design- balance, harmony, proportion, emphasis, rhythm, repetition and unity; balance types – symmetrical, asymmetrical and radial balance; rhythm through repetition, alternation, gradation, radiation and continuous line movement; introducing principles of design in garment development

UNIT III **6**

Colour - dimensions of colour, colour psychology- warm and cool colours, advancing and receding colours, colour theory -Munsell colour system, Prang colour wheel, Ostwald colour system and colour harmonies.

UNIT IV **6**

Fashion terminologies, principles of fashion, fashion life cycle, fashion adoption theories; role of a fashion designer - concept of fashion forecasting and techniques, apparel line for seasons; design analysis for different body types and creating illusion in designs

UNIT V **6**

Stitch types and uses; seam types and uses; components of single needle lockstitch machine and working aids

TOTAL: 30 PERIODS

PRACTICALS

1) Identification of single needle lockstitch machine (SNLS) components and understanding their functions.
2) Needle fixing and threading in single needle, double needle, over-lock, flat lock and feed-of the-arm machine.
3) Practice for pedal and knee lifter operations and winding the bobbin thread.
4) Sewing exercise on paper in SNLS
   - Exercise 1 - Parallel line
   - Exercise 2 - Square
   - Exercise 3 - Curves
   - Exercise 4 - Concentric curves
5) Stitching exercise on fabric panels in SNLS
   - Exercise 1 - Parallel line
   - Exercise 2 - Square
   - Exercise 3 – Curves

6) Prepare samples in SNLS machine by varying the stitch length and thread tension.

TOTAL: 30 PERIODS

OUTCOMES:

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

- CO1: elements of design and incorporate them in developing a garment.
- CO2: principles of design and incorporate them in developing a garment
- CO3: colour theories
- CO4: Fashion theories and fashion forecasting
- CO5: Stitches, seams and sewing machine components
- CO6: Students shall know components of sewing machine and sew the fabrics practically

TEXTBOOKS:

1.Suzanne G Marshall, Hazel O Jackson “Individuality in Clothing and Personal Appearance”, Prentice Hall, New Jersey, 2000.

2. Marian L Davis, “Visual Design and Dress”, Prentice Hall, New Jersey, 1996

3. Kathryn McKelvey and Janine Munslow, —Fashion Design: Process, Innovation and Practicell, Blackwell Publishing, USA, 2005.

REFERENCES:

1. Diane.T and Cassidy. T, —Colour forecasting Blackwell Publishing, 2005

2.Harold Carr, “Fashion Design and Product Development”, John Wiley and Sons Inc., NewYork,1992.

3. Angel Fernandez and Gabriel Martin Roig, “Drawing for fashion designers”, Anova books company ltd., UK, 2007

Course Articulation Matrix:

Course Outcomes	Statement	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
CO1	Understand elements of design and incorporate them in developing a garment.	2	3	3	1	3	–	–	-	-	2	3	-	2	3	3
CO2	Understand principles of design and incorporate them in developing a garment	2	2	3	1	3	–	–	-	-	3	2	-	2	3	3
CO3	Understand colour theories	3	3	3	1	2	–	–	-	-	3	3	-	3	3	3
CO4	Understand Fashion theories and fashion forecasting	2	3	3	1	2	–	–	-	-	3	3	-	3	3	3
CO5	Understand Stitches, seams and sewing machine components	3	3	3	1	2	–	–	-	-	3	2	-	3	3	3
CO6	Students shall know components of sewing machine and sew the fabrics practically	3	2	2	1	-	-	-	-	-	2	3	-	3	2	3
Overall CO		3	3	3	1	2	–	–	-	-	3	3	-	3	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5303 **PATTERN MAKING I** **L T P C**
3 0 0 3

OBJECTIVES:

- To introduce students the anthropometrics measurements and clothing sizing systems
- To enable students understand body measurements across different age groups
- To equip students with comprehensive pattern making skills

UNIT I BASICS OF ANTHROPOMETRICS AND SIZING SYSTEM **9**

Anthropometry measurements –traditional, 3D body scanning; principles of sizing systems; body appearance, its relation to clothing, illusions created by clothing, body ideals-Eight head theory, body proportions, height and weight distribution; standard measurement chart-designation and control dimensions

UNIT II BODY MEASUREMENTS AND PATTERN TERMINOLOGIES **9**

Body measurements- methods of measuring body dimensions, landmark terms;measuring the dress-form, ease and allowances; functions of pattern making tools, pattern grain line, balance line terms, notches, seam allowance, jog seam, dart points, pleats, flares, gather and true bias, truing, blending.

UNIT III BODICE PATTERNS **9**

Drafting method of patternmaking – basic top and bottoms blocks for men and women; draping method of pattern making – basic bodice – front, back and skirt for women

UNIT IV PATTERNS FOR OTHER GARMENT COMPONENTS **9**

Pocket classification; collar classification and terms, basic shirt collar, Peter Pan collar, sailor collar, mandarin collar; built-up neck lines, halter neck lines, cowls; sleeve cap, sleeve cuffs, puff, petal, lantern and leg-of-mutton sleeves; Yoke styles, plackets; facing patterns for cut-out necklines and armholes.

UNIT V PATTERNMAKING PRINCIPLES **9**

Principles of patternmaking - dart manipulation, added fullness and contouring principles; drafting method-single and two dart series-slash-spread technique, pivotal transfer technique; graduated and radiating darts; parallel, asymmetric and intersecting darts; draping method-basic bodice blocks-two and one dart blocks.

TOTAL: 45 PERIODS

OUTCOMES:

On completion of the course students are expected to

CO1. Take cognizance of the significance of Anthropometric and the clothing sizing systems

CO2. Understand methods of taking body measurements

CO3. Be aware of drafting and draping methods of pattern preparation

CO4. Develop patterns for other garment components using pattern making principles

TEXTBOOKS:

1. Fan J., Yu W., and Hunter L., “Clothing Appearance and Fit: Science and Technology”, Wood head Publishing Limited, 2004, ISBN: 1855737450 | ISBN-13: 9781855737457
2. Ashdown S., “Sizing in Clothing”, Wood head Publishing Limited, 2007, ISBN: 1845690346 | ISBN-13: 9781845690342

REFERENCES:

1. Helen Joseph Armstrong., “Patternmaking for Fashion Design”, Pearson Education Pvt Ltd., 2005,ISBN: 067398026X | ISBN-13: 9780673980267
2. Winifred Aldrich., “Metric Pattern Cutting for Children’s Wear and Baby Wear”, Blackwell Publishing, 2009, ISBN: 140518292X | ISBN-13: 9781405182

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Course Articulation Matrix

Course Outcomes	Statement	PO1	PO2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PSO2	PSO3
CO1	Take cognizance of the significance of Anthropometric and the clothing sizing systems	3	3	3	3	2	-	-	-	-	2	2	2	3	2	2
CO2	Understand methods of taking body measurements	3	3	3	3	2	-	-	-	-	2	2	2	3	2	2
CO3	Be aware of drafting and draping methods of pattern preparation	3	3	3	2	2	-	-	-	-	2	2	2	3	2	2
CO4	Develop patterns for other garment components using pattern making principles	3	3	2	2	2	-	-	-	-	2	2	2	3	2	2
Overall CO		3	3	3	2	2	-	-	-	-	2	2	2	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5311 **PATTERN MAKING LAB 1** **L T P C**
0 0 4 2

OBJECTIVES:

- To enable the students to practically carryout pattern making and styling of men, women and children garments
- To get hand on experience in dart manipulations and draping method of pattern making.

LIST OF EXPERIMENTS

1. Measuring the Dress Form – male, female and child and formulating the measurement charts
2. Drafting the basic blocks of male and female
3. Drafting patterns of sleeve variations
4. Drafting patterns of collars, cuffs variations
5. Drafting patterns of pocket variations
6. Dart manipulation of single darts using slash spread and pivotal techniques
7. Dart manipulation of double darts using slash spread and pivotal techniques
8. Graduated and radiating darts
9. Asymmetric dart variations
10. Basic bodice-front, back and skit patterns using draping technique

TOTAL: 60 PERIODS

OUTCOMES:

On completion of the course students are expected to

CO1. Develop and understand standard measurement chart formulation
CO2. Construction of basic blocks using drafting and draping techniques
CO3. Patterns construction for different styles
CO4. Dart manipulation techniques and its variations
CO5. Method of solving fitting problems in patterns

Course Articulation Matrix

Course Outcomes	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Develop and understand standard measurement chart formulation	3	3	3	2	2	-	2	-	2	2	2	2	3	2	2
CO2	Construction of basic blocks using drafting and draping techniques	3	3	3	2	2	-	2	-	2	2	2	2	3	2	2
CO3	Patterns construction for different styles	3	3	3	2	2	-	2	-	2	2	2	2	3	2	2
CO4	Dart manipulation techniques and its variations	3	3	3	2	2	-	2	-	2	2	2	2	3	2	2
CO5	Method of solving fitting problems in patterns	3	3	3	2	2	-	2	-	2	2	2	2	3	2	2
Overall CO		3	3	3	2	2	-	2	-	2	2	2	2	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5401 **GARMENT CONSTRUCTION** **L T P C**
3 0 0 3

OBJECTIVE:
To enable the students to understand the process of garment construction

UNIT I LAYING, MARKING AND CUTTING 9
Basics of fabric spreading, modes of spreading, different fabric packages and unwinding methods, spreading tension, uniformity and alignment, woven fabric lay, knitted fabric lay, types of fabric lay, lay planning principles; marker making, principles of marker making, types of markers, marker planning and marker efficiency, and fabric design parameters on markers, grain line; fabric cutting methods, advancements in cutting room technology

UNIT II SEAMS AND STITCHES 9
Seam types and classes; stitch types and classes, properties and applications; machine elements in sewing

UNIT III GARMENT COMPONENTS AND ITS STYLINGS 9
Ladies, men's and children's wear – basic blocks, collars, sleeves, cuffs, pleats, gatherings, darts, pockets, welts, yoke; purpose of darts and dart equivalents; innerwear and lingerie; balance and symmetry in garment construction; sewing threads- types and characteristics; stitch parameters; sewing defects

UNIT IV STYLES AND OPERATION BREAKDOWN 13
Operation break down for various styles of shirts, trousers, t-shirts, jackets, blouses, skirts, salwar and kameez; material flow and assembly of garments

UNIT V PRODUCTION PROCESSES 5
Production systems - full garment assembly, make through, batch production, progressive bundle, straight line assembly, unit production system, modular production system

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Upon completion of this course, the students shall
CO1 - Understand various processes involved in garment construction
CO2 - Know seams and stitches used in garment construction
CO3 - Know various garment components
CO4 - Know operation breakdown for different styles of garments
CO5 - Know different apparel production systems

TEXTBOOKS:

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

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3. Ruth E. Glock., and Grace I. Kunz., “Apparel Manufacturing, Sewn Product Analysis”, fourth edition, Pearson Education,2004, ISBN: 0131119826 ISBN-13: 9780131119826.

REFERENCES:

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 De Cosse Incorporated, 1991,ISBN: 0865732604 | ISBN-13: 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. Johes I., and Styles G.K., “Joining Textiles Principles and Application”, Wood head Publications Pvt. Ltd 2013, ISBN: 1845696271 | ISBN-13: 97

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
CO1	Understand various process involved in garment construction	2	2	2	-	-	-	-	-	-	2	2	-	1	1	3
CO2	Know seams and stitches used in garment construction	2	2	2	-	-	-	-	-	-	2	2	-	1	1	3
CO3	Know various garment components	2	2	2	-	-	-	-	-	-	2	2	-	1	2	3
CO4	Know operation breakdown for different styles of garments	2	2	2	-	-	-	-	-	-	2	2	-	2	1	3
CO5	Know different apparel production systems	2	2	2	-	-	-	-	-	-	2	2	-	2	1	3
Overall CO		2	2	2	-	-	-	-	-	-	2	2	-	2	1	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5402 FUNDAMENTALS OF KNITTING AND NONWOVEN MANUFACTURE **L T P C**
3 0 0 3

OBJECTIVE:

To make the students understand fundamentals of knitting and types of knitting processes

UNIT I FUNDAMENTALS OF KNITTING **9**

Reasons for the growth of the knitting industry; comparison of fabric properties-woven, knitted and bonded fabrics; classification of knitting processes – weft knit &warp knit; yarn quality requirements for knitting; general definitions and principles of knitting; types of knitting needles – Bearded, Latch &Compound needle; elements of knitted loop structure

UNIT II KNITTINGI **9**

Basic weft knitted structures and their production -plain, rib, interlock and purl; fundamentals of formation of knit,tuck and float stitches; analysis of various types of weft knitted structure

UNIT III KNITTING II **9**

Production of various weft knitted structures using flat knitting machines; Basic principles; elements of warp knitted loop open and closed laps; tricot and raschelwarp knitting machines; warp knitted fabrics–structures and end uses; weft and warp knitted fabric defects

UNITIV WEB PREPARATION FOR NONWOVENS **9**

Introduction; classification – dry laid, wet laid, air laid; principle, machines, processes for web preparation by dry laid, wet laid and air laid; quality control of webs; web preparation by polymeric solution

UNIT V BONDING OF NONWOVEN **9**

Bonding methods- principles, machine; processes for mechanical, thermal, chemical bonding; process parameters; application

TOTAL PERIODS: 45

OUTCOMES

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

- CO1: Fundamentals of knitting
- CO2: Basic weft knitted structure
- CO3: Basic warp knitted structure
- CO4: Non woven web formation
- CO5: Non woven bonding techniques

TEXTBOOKS

1. Spencer D.J.,“KnittingTechnology”, IIIEd.,TextileInstitute,Manchester, 2001,ISBN:1855733331.
2. Samuel Raz., “FlatKnitting: Thenewgeneration”, MeisenbachGmbH, Bamberg,1997,ISBN:3-87525-054-0.
3. 2.SamuelRaz.,“WarpKnittingproduction”,MelliandTextilberichte,GmbH,Rohrbacher,1987,ISBN: 3-87529-022-4

REFERENCES

1. AjgaonkarD.B., “Knitting technology”, Universal Publishing Corporation, Mumbai,1998,ISBN:0818502738/ISBN:9780818502736

2. Chandrasekhar Iyer, Bernd Mammeland
WolfgangSchach,“CircularKnitting”,MeisenbachGmbH,Bamberg,1995,ISBN:3-87525-066-4.

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
CO1	Fundamentals of knitting	2	3	2	2	-	-	-	-	2	-	2	2	3	1	2
CO2	Basic weft knitted structure	2	3	2	2	-	-	-	-	2	-	2	2	3	1	2
CO3	Basic warp knitted structure	2	3	2	2	-	-	-	-	2	-	2	2	3	1	2
CO4	Non-woven web formation	2	3	2	2	-	-	-	-	2	-	2	2	3	1	2
CO5	Non-woven bonding techniques	2	3	2	2	-	-	-	-	2	-	2	2	3	1	2
Overall CO		2	3	2	2	-	-	-	-	2	-	2	2	2	1	2

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5451 GARMENT PRODUCTION MACHINERY L T P C
2 0 2 3

OBJECTIVE:
To enable the students to learn the machines and mechanisms of machines used for garment production

UNIT I FABRIC INSPECTION, SPREADING AND CUTTING MACHINES 6

Fabric inspection machinery; spreading machines – manual, semi-automatic and fully automatic machines; mechanism of straight knife, rotary, band knife, die, laser, plasma, water jet and ultrasonic cutting machines; notches, drills and thread markers; computer interfaced cutting machines; safety measures

UNIT IISEWING MACHINES I 6

Lock stitch and chain stitch sewing machine – types, threading, driving arrangement, function of elements, stitch formation, timing, settings and feed mechanism; selection of machine and process parameters for different applications; safety measures

UNIT III SEWING MACHINES II 6

Needles-geometry and types, selection; button fixing and button holing machine – mechanism and features

UNIT IV SEWING MACHINESIII **6**

Overlock, flatlock, feed-off the arm, zig-zag and embroidery machines– driving arrangement, function of elements, stitch formation, timing, settings and feed mechanism; safety measures

UNIT V FINISHING MACHINES 6

Pressing machineries – buck pressing, iron pressing, block or die pressing, form pressing, steamers; folding and packing machines; safety measures

TOTAL: 30 PERIODS

PRACTICALS
LIST OF EXPERIMENTS
Study on following mechanisms

- Needle bar working
- Hook /Looper mechanism
- Feeding mechanism
- Threading and tensioningfor

1. SNLS machine
2. Chain stitch machine
3. Overlock machine
4. Flatlock machine
5. Feed off arm machine

TOTAL: 30 PERIODS

TOTAL: 60 PERIODS
OUTCOMES:

Upon completion of the course, the students would understand

CO 1 - Fundamental principle and working of machines used for spreading and cutting
CO 2 - Stitch formation and other mechanisms of SNLS machine and chain stitch machine
CO 3 - Principle of button fixing and button holing machines
CO 4 - Stitch formation and other mechanisms of overlock, flatlock and other special sewing machines
CO 5 - Different types of finishing machines used for garments

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TEXTBOOKS:

1. Harold Carr., and Barbara latham., “The Technology of Clothing Manufacture”, 4th Edition, Whiley-Black well Sciences, 2008, ISBN: 1405161981 / ISBN: 978-1405161985
2. Jacob Solinger., “Apparel Manufacturing Handbook”, 2nd Edition Bobbin Blenheim Media Corp, 1988, ISBN : 1879570009 / ISBN: 978-1879570009
3. Ruth E. Glock., and Grace I. Kunz., “Apparel Manufacturing Sewn Product Analysis”, 4th Edition, Pearson Prentice Hall, 2005, ISBN: 0131119826 | ISBN-13: 9780131119826

REFERENCES:

1. Villumsone-Nemes I., “Industrial Cutting of Textiles material”, Wood head Publications Pvt. Ltd 2012, ISBN: 978-1-85709-134-5
2. JelkaGersak., “Design of Clothing Manufacture Process - A Systematic Approach to Planning Scheduling and Control”, Wood head Publications Pvt. Ltd, 2013, ISBN: 978-1-85709-778-1

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Fundamental principle and working of machines used for spreading and cutting	2	2	2	-	-	-	-	-	-	2	2	2	2	1	3
CO2	Stitch formation and other mechanisms of SNLS machine and chain stitch machine	2	2	2	-	-	-	-	-	-	2	2	2	1	1	3
CO3	Principle of button fixing and button holing machines	2	2	2	-	-	-	-	-	-	2	2	2	1	1	3
CO4	Stitch formation and other mechanisms of overlock, flatlock and other special sewing machines	2	2	2	-	-	-	-	-	-	2	2	2	1	1	3
CO5	Different types of finishing machines used for garments	2	2	2	-	-	-	-	-	-	2	2	2	1	1	3
Overall CO		2	2	2	-	-	-	-	-	-	2	2	2	2	1	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5452	PATTERN MAKING II	LT P C
	(Prerequisite for this course is AT5303)	**3 0 0 3**

OBJECTIVES:

To enable the students to develop better understanding on

- pattern construction and styling from basic blocks and
- grading and pattern alteration techniques to provide good fit

UNIT I MENS WEAR 9

Basic formal shirts, bottom wear styles – slack, cullotte, trouser, jean; coats and jackets

UNIT II WOMENS WEAR 9

Basic formal shirts, trousers, office jackets; skirts foundation – A line, straight, pegged, bell shaped; saree blouse; Salwar Kameez

UNIT III CHILDREN WEAR 9

Basic pattern set; dresses and jumpers; pants and jump suit; baby frocks, rompers

UNIT IV CASUAL AND PARTY WEAR 9

Beach and leisurewear-swimsuit, bikini, short blocks, beach wraps; Pajamas; Bodysuit; Princess line, strapless princess-style garments; bias styled dresses- symmetrical and asymmetrical; dresses without waist lines

UNIT V PATTERN ALTERATION AND GRADING 9

Pattern alteration for fit, pattern grading process, grade rules and types of grading system

OUTCOMES:

On completion of the course students are expected to

CO1	Develop patterns for men's wear
CO2	Develop patterns for women's wear
CO3	Develop patterns for children's wear dresses
CO4	Understand formal, casual and party wear design styling
CO5	Enable pattern alteration and grading

TOTAL: 45 PERIODS

TEXTBOOKS:

1. Fan J., Yu W., and Hunter L., "Clothing Appearance and Fit: Science and Technology", Wood head Publishing Limited, 2004, ISBN: 1855737450 | ISBN-13: 9781855737457
2. Ashdown S., "Sizing in Clothing", Wood head Publishing Limited, 2007, ISBN: 1845690346 | ISBN-13: 9781845690342

REFERENCES:

1. Helen Joseph Armstrong., "Patternmaking for Fashion Design", Pearson Education Pvt Ltd., 2005,ISBN: 067398026X | ISBN-13: 9780673980267
2. Winifred Aldrich., "Metric Pattern Cutting for Children's Wear and Baby Wear", Blackwell Publishing, 2009, ISBN: 140518292X | ISBN-13: 9781405182928

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome													
		PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	Develop patterns for men's wear	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO2	Develop patterns for women's wear	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO3	Develop patterns for children's wear dresses	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO4	Understand formal, casual and party wear design styling	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO5	Enable pattern alteration and grading	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
Overall CO		2	2	2	-	-	-	-	-	2	2	2	2	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5403 **FABRIC STRUCTURE** **L T P C**
2 0 44

OBJECTIVE:

To enable the students to learn about different structures of woven fabric and design the structure for different applications

UNIT I **6**
Basic weaves – plain, twill, satin, sateen and their derivatives

UNIT II **6**
Ordinary and Brighten Honey Comb; Huck-a-Back and its modifications; Mock Leno; crepe weaves; colour theory- light and pigment theory; modification of colour, colour and weave effects; bedford cords - plain and twill faced, wadded; welts and piques, wadded piques

UNIT III **6**
Backed fabrics -warp and weft, reversible and non-reversible fabrics; extra warp and extra weft figuring - single and double colour

UNIT IV **6**
Pile fabrics; warp pile - wire pile, terry pile, loose backed; weft pile – plain back and twill back velveteen, lashed pile, corduroy, weft plush

UNIT V **6**
Double cloth- types of stitches; Damasks; Gauze and Leno principles; trade names of popular fabric structures

TOTAL: 30 PERIODS

PRACTICALS:
1. Visual identification of commercially available woven, knitted and nonwoven fabrics
2. Analysis of construction details of the following fabric structures
   - i Plain and its derivatives
   - ii Twill and its derivatives
   - iii Satin (Regular and irregular)
   - iv Sateen (Regular and irregular)
   - v Honeycomb (ordinary and Brighton)
   - vi Huck-a-back
   - vii Extra warp and extra weft figuring
   - viii Pile fabrics (warp and weft)
   - ix Gauze and Leno
   - x Double cloth
   - xi Crepe
   - xii Single jerseyand its derivatives
   - xiii Double jersey structures and its derivatives

TOTAL: 60 PERIODS

OUTCOMES:

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

- CO1:basic structures of woven fabric
- CO2: colour and weave effect and special weaves
- CO3: structure for backed fabrics and extra warp/weft fabrics
- CO4: Structure of warp and weft pile fabrics
- CO5: special structures and trade names of popular fabric structure
- CO6:Construct the design, draft and peg-plan of fabrics practically
- CO7: Analyse the structure of knitted fabrics practically

TEXTBOOKS:

1. GrosickiZ. J., "Watson's Textile Design and Colour", Vol.1, Wood head Publications, Cambridge England, 2004, ISBN: 1 85573 7701 24.
2. Grosicki Z. J., "Watson's Advanced Textile Design and Colour", Vol. II, Butterworths, London, 1989, ISBN-9781855739963
3. Wilson J., "Handbook of Textile Design", Textile Institute, Manchester, 2001, ISBN: 1 85573 5733.

REFERENCES:

1. Horne C.E., "Geometric Symmetry in Patterns and Tilings", Textile Institute, Manchester, 2000, ISBN: 1 85573 4923.
2. Seyam A. M., "Structural Design of Woven Fabrics, Theory and Practice", Textile Institute, Manchester, 2002, ISBN: 1 87037 2395.
3. GeornerD., "Woven Structure and Design, part 1: Single Cloth Construction", WIRA, U.K., 1986, ISBN: 0900820179 | ISBN-13: 9780900820175
4. GeornerD., "Woven Structure and Design, Part 2: Compound Structures", WIRA, U.K., 1989, ISBN: 090366951X | ISBN-13: 9780903669511
5. Jan Shenton, "Woven Textile Design", Laurence King Publishing, 2014, ISBN: 178067337X | ISBN-13: 9781780673370.

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	basic structures of woven fabric	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO2	colour and weave effect and special weaves	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO3	structure for backed fabrics and extra warp/weft fabrics	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO4	Structure of warp and weft pile fabrics	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO5	special structures and trade names of popular fabric structure	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO6	Construct the design, draft and peg-plan of fabrics practically	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
CO7	Analyse the structure of knitted fabrics practically	2	2	2	2	2	-	-	2	2	2	2	2	2	2	2
Overall CO		2	2	2	2	2	-	-	2	2	2	2	2	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5411	PATTERN MAKING LAB II	L T P C 0 0 4 2

OBJECTIVE:

To enable students to practically carryout pattern making for men, women and children garments

LIST OF EXPERIMENTS

1. Drafting of men's formal shirt
2. Drafting of trousers – men's and women's
3. Drafting of women's formal shirt
4. Drafting of women's skirt – any one variation
5. Drafting of saree blouse
6. Drafting of Salwar Kameez
7. Drafting of Princess line (or) bias party wear
8. Drafting of children's rompers and jumpsuits

TOTAL:60 HOURS

OUTCOMES:

On completion of the course students are expected to

CO1	Develop pattern drafting and
CO2	Develop styling skills
CO3	Develop various formal and traditional pattern stylings for women's garments
CO4	Develop various pattern stylings for men's and
CO5	Develop various pattern stylings for children's clothing's

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome													
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	Develop pattern drafting and	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO2	Develop styling skills	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO3	Develop various formal and traditional pattern stylings for women's garments	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO4	Develop various pattern stylings for men's and	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO5	Develop various pattern stylings for children's clothing's	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
Overall CO		2	2	2	-	-	-	-	-	2	2	2	2	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5412	GARMENT CONSTRUCTION LAB I	L T P C 0 0 4 2

OBJECTIVES

To train the students on construction of different types of garments

LIST OF EXPERIMENTS

1. Sewing practice of different stitch classes
2. Sewing practice of seam types – superimposed seam, lapped seam, bound seam and flat seam.
3. Sewing of different types of plackets
4. Sewing of different types of pockets
5. Sewing of different types of sleeves
6. Sewing of different types of collars and cuff
7. Sewing of different types of neckline finishes
8. Sewing of different types of pleats, tucks and gathers
9. Practice in Button hole and button stitch machines
10. Practice in Feed-off the arm machine
11. Attachment of trims with fabric with different presser foot.

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion of this practical course, the students can

CO 1 - Construct samples for various types of seams and stitches

CO 2 - Construct samples for various types of garment components

CO 3 - Construct samples for various dart equivalents

CO 4 - Carry out button holing and button stitching and would have hands on experience on different machines used for garment manufacture.

CO 5 - Construct samples for attachment of trims

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Construct samples for various types of seams and stitches	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO2	Construct samples for various types of garment components	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO3	Construct samples for various dart equivalents	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO4	Carry out button holing and button stitching and would have hands on experience on different machines used for garment manufacture.	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
CO5	Construct samples for attachment of trims	2	2	2	-	-	-	-	-	2	2	2	2	2	2	3
Overall CO		2	2	2	-	-	-	-	-	2	2	2	2	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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HM5551 FUNDAMENTALS OF ECONOMICS AND MANAGEMENT

L	T	P	C
3	0	0	3

OBJECTIVE :

- To explain principles of economics relevant to managing an organization, to describe principles of economics to have the understanding of economic environment of business.
- To study the Evolution, Functions and Principles of Management.

UNIT I : BASIC CONCEPTS OF ECONOMICS AND MARKET 9

Definition, scope of economics; fundamental concepts; demand, supply, equilibrium; theory of production, cost; forms of market; concepts of revenue; pricing in perfect and imperfect competition.

UNIT II : NATIONAL INCOME AND MONEY 9

National income - concept, measurement, economic welfare; concept of consumption, saving and investment; economic growth - measurement, fluctuation, control; Money-theory, exchange - Demand and supply of money.

UNIT III : INFLATION AND GOVERNMENT POLICY 9

Inflation - causes, effect , control; Inflation VS Unemployment, Philips curve; Government policies, Fiscal and Monitoring Policy, planning - economic growth and public welfare.

UNIT IV : MANAGEMENT PRINCIPLES AND ORGANIZATIONS 9

Definition of Management - Science or Art - Manager vs. Entrepreneur - Types of Managers - Managerial Roles and Skills - Evolution of Management - Scientific, Approaches of Management - Types of Business Organization - Sole Proprietorship, Partnership, Company - Public and Private Sector Enterprises - Organization Culture and Environment.

UNIT V : FUNCTIONS OF MANAGEMENT 9

Planning - Nature and Purpose- Objectives - Strategies - Policies and Planning Premises - Decision Making - Organizing - Nature and Process - Premises - Departmentalization - Line and Staff - Decentralization - Organizational culture, Staffing - Selection and training - Placement - Performance appraisal - Career Strategy - Leadership - Communication, Controlling - Process of Controlling - Controlling techniques, productivity and operations management - Preventive control, Industrial Safety.

Total :45 PERIODS

OUTCOMES :

Upon completion of the course,

- Students are expected to become familiar with principles of economics.
- Able to perform managerial functions like planning, organizing, staffing, leading & controlling.

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. Stephen A. Robbins, David A. Decenzo and Mary Coulter, "Fundamentals of Management" Pearson Education, Seventh Edition, 2011.
4. Pau. A. Samuelson, William D., Nordhaus, Sudip Chaudhuri and Anindya Sen, Economics, 19th eidtion, Tata McGraw Hill, New Delhi, 2010.
5. Richard Lipsey & Alec Charystal, Economics, 12th ed., Oxford University Press, New Delhi, 2011.
6. Kari E. Case and Ray C.fair, "Principles of Economics", 6th ed., Pearson, Education Asia, ND, 2002.

AT5501 TEXTILE CHEMICAL PROCESSING L T P C

3 0 2 4

OBJECTIVE:

To enable the students to learn about basics of pre-treatments, dyeing,printing and finishing of textiles

UNIT I DYEING 9

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

UNIT II PRINTING 9

Printing with dyes and pigments; principles of transfer and ink-jet printing; dyeing and printing faults; assessment of fastness properties of dyed and printed goods

UNIT III MEASUREMENT OF COLOUR 9

Fundamentals of colour science, assessment of colour of dyed and printed goods; assessment of whiteness and yellowness indices and colour difference; pass/fail decision making, basics of colour matching technique

UNIT IV FINISHING 9

Calendaring, shrink proofing, crease proofing, softening; finishing of knits; garment finishing; methods of assessment of all the above finishes

UNIT V ECO FRIENDLY TEXTILE PROCESSES 9

Eco friendly chemical processes; banned dyes and chemicals, evaluation techniques for assessment of these agents, eco labels

TOTAL: 45 PERIODS

LIST OF EXPERIMENTS

1. Dyeing of cotton using reactive dyes
2. Printing of cotton fabric by direct/ discharge technique
3. Determination of wash, perspiration, light and rubbing fastness of dyed fabrics
4. Determination of skew, bow and shrinkage of dyed fabrics
5. Determination of whiteness and yellowness index
6. Determination of color parameters in fabric using spectrophotometer
7. Determination of residual formaldehyde on garments
8. Determination of PCP estimation on fabrics

TOTAL: 30 PERIODS

OUTCOMES:

Upon completion of theory course, the student shall have the knowledge on

CO1:Necessity of pre-treatments in dyeing process and principle of dyeing of different materials

·CO2: Methods, styles and different types of printing

·CO3: Fundamentals of colour science and assessment of coloured goods

·CO4: Finishes used for textile and assessment of finishes

·CO5: Eco friendly, banned dyes and their evaluation techniques

CO6: Upon completion of practical course, the students can dye, print the textile material and measure colour and fastness properties

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TEXTBOOKS:

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. Karamkar 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.

REFERENCES:

1. Clark M. (Ed.), “Handbook of Textile and Industrial dyeing Vol. 1: Principles and Types ofdyes”, Woodhead Publishing India Pvt. Ltd., New Delhi 2011, ISBN: 1845696956 | ISBN-13: 9781845696955
2. Mittal R.M. and Trivedi S.S., “Chemical Processing of Polyester/Cellulosic Blends”, Ahmedabad Textile Industry's Research Association, 1983, ISBN: B0007B561K
3. Bhagwat R. S., “Handbook of Textile Processing”, ColourPublication, Mumbai. 1999.
4. Shenai V. A., “Technology of Printing”, Sevak Publications, Mumbai, 1996
5. Miles W. C., “Textile Printing”, Wood head Publication, 2003, ISBN 0 901956 76 1
6. ohnson A., “The Theory of Colouration of Textiles”, SDC, Second edition, 1989,ISBN 0 901956 481
7. Shah H. S., and Gandhi R. S., “Instrumental Colour Measurement and Computer Aided Colour Matching for Textiles”, Mahajan Book Publication, 1990, ISBN: 8185401004 / ISBN: 9788185401003
8. Choudhury A.K.R.,” Modern concepts of colour and Appearance”, Oxford and IBH publishing Ltd., 2000, ISBN: 1578080789 | ISBN-13: 9781578080786

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	Necessity of pre-treatments in dyeing process and principle of dyeing of different materials	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
CO2	Methods, styles and different types of printing	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
CO3	Fundamentals of colour science and assessment of coloured goods	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
CO4	Finishes used for textile and assessment of finishes	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
CO5	Eco friendly, banned dyes and their evaluation techniques	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
CO6	Upon completion of practical course, the students can dye, print the textile material and measure colour and fastness properties	-	-	-	-	-	3	2	2	3	2	2	3	-	-	-
Overall CO		-	-	-	-	-	3	2	2	3	2	2	3	-	-	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5502 **FABRIC QUALITY EVALUATION** **L T P C**
2 0 2 3

OBJECTIVES:

To enable the students to learn about the constructional details of fabrics, evaluation of fabric properties and their importance

UNIT I CONSTRUCTION CHARACTERISTICS **6**

Basic fabric particulars;determination of endand pick density, warp and weft count, thickness areal density, crimp, cover factor; fabric sampling techniques; testing standards.

UNIT II STRENGTH CHARACTERISTICS **6**

Principles of testing; determination of tensile strength, tear strength, bursting strength,seam strength;testing standards.

UNIT III COMFORT AND SURFACE CHARACTERISTICS **6**

Measurement of moisture and thermal characteristics; principle of measurements - flexural rigidity, drapeability, crease recovery, wrinkle recovery, air permeability, fabric shrinkage, skew, bow, fabric abrasion resistance, pilling resistance; testing standards

UNIT IV SPECIAL CHARACTERISTICS **6**

Low stress mechanical properties -KES, FAST; flame resistance and water repellence

UNIT V GARMENT QUALITY EVALUATION **6**

Fabric inspection – different systems; classification of fabric defects; quality assessment of garments - cutting, sewing, pressing and finishing; seam puckering, delamination, button pulling, testing of sewing threads

TOTAL: 30 PERIODS

LIST OF EXPERIMENTS

Determination of following characteristics of fabrics:

1. Tensile strength
2. Bursting strength
3. Tear strength
4. Flexural rigidity and bending modulus
5. Drapability
6. Crease recovery
7. Wrinkle recovery
8. Abrasion resistance
9. Pilling resistance
10. Air permeability
11. Button pulling test
12. Delamination test
13. Testing of sewing threads, interlining and buttons

14. Seam strength and seam slippage

OUTCOMES:

Upon completion of this course, the students would be able to understand the

CO1 - Constructional parameters of fabrics
CO2 - Principle of fabric strength testing
CO3 - Measuring of surface characteristics fabrics
CO4 - Low Stress Mechanical and special characteristics of fabrics
CO5 - Garment Quality Evaluation
CO6 - Testing of fabric properties

TOTAL :30 PERIODS

TEXTBOOKS

1. Booth J.E., “Principle of Textile Testing”, Butterworth Publications, London, 1989
2. Saville B.P., “Physical Testing of Textiles”, Textile Institute, Manchester, 1998
3. Kothari V. K., “Testing and Quality Management”, Progress in Textile Technology Vol.1, IAFL Publications, New Delhi, 1999

REFERENCES:

1. Ruth clock and Grace Kunz., “Apparel Manufacture – Sewn Product Analysis”, Upper Sadle River Publications, New York, 2000
2. Pradip V. Mehta., “Managing Quality in the Apparel Industry”, NIFT Publication, India, 1998
3. Sara J. Kadolph., “Quality Assurance for Textiles and Apparels”, Fair Child Publications, New York, 1998
4. Slater K., “Physical Testing and Quality Control”, The Textile Institute, Vol.23, No.1/2/3 Manchester, 1993

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Constructional parameters of fabrics	3	3	3	2	–	–	–	3	2	–	2	–	3	3	2
CO2	Principle of fabric strength testing	3	3	3	2	–	–	–	3	2	–	2	–	3	3	2
CO3	Measuring of surface characteristics fabrics	–	3	3	2	–	–	–	3	2	–	2	–	3	3	2
CO4	Fabric low stress mechanical and special characteristics of fabrics	–	3	3	2	–	–	–	3	2	–	2	–	3	3	2
CO5	Garment quality evaluation	–	3	3	2	–	–	–	3	2	–	2	–	3	3	2
CO6	Experimental study on the fabric properties	–	3	3	2	–	–	–	3	2	–	2	–	3	3	2
	Overall CO	3	3	3	2	-	–	–	3	3	-	3	-	3	3	3

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

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GE5251 ENVIRONMENTAL SCIENCES L T P C
3 0 0 3

OBJECTIVES:

- To introduce the basic concepts of environment, ecosystems and biodiversity and emphasize on the biodiversity of India and its conservation.
- To impart knowledge on the causes, effects and control or prevention measures of environmental pollution and natural disasters.
- To facilitate the understanding of global and Indian scenario of renewable and non-renewable resources, causes of their degradation and measures to preserve them.
- To familiarize the influence of societal use of resources on the environment and introduce the legal provisions, National and International laws and conventions for environmental protection.
- To inculcate the effect of population dynamics on human and environmental health and inform about human right, value education and role of technology in monitoring human and environmental issues.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 14

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

UNIT II ENVIRONMENTAL POLLUTION 8

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – soil waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III NATURAL RESOURCES 10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land 47 degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 7

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

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 6

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

TOTAL: 45 PERIODS

OUTCOMES:

- To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
- To identify the causes, effects and environmental pollution and natural disasters and contribute to the preventive measures in the immediate society.
- To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
- To recognize different forms of energy and apply them for suitable applications in for technological advancement and societal development.
- To demonstrate the knowledge of societal activity on the long and short term environmental issues and abide by the legal provisions, National and International laws and conventions in professional and personal activities and to identify and analyse effect of population dynamics on human value education, consumerism and role of technology in environmental issues.

TEXT BOOKS:

1.Anubha Kaushik and C. P. Kaushik's "*Perspectives in Environmental Studies", 6th*Edition,New Age International Publishers (2018).

2.Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, (2016).

3.Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004).

REFERENCE BOOKS:

1.R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media.

2.Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ., House, Mumbai, 2001.

3.Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT. LTD, New Delhi, 2007.

4.Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press (2005).

5.Erach Bharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. (2013).

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Course Articulation Matrix:

Course Outcomes	Statement	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	-	-	-	3	-	2	2	3	3	-	-	-	-	-	3
CO2	To identify the causes, effects and environmental pollution and natural disasters and contribute to the preventive measures in the immediate society.	-	-	-	3	-	2	2	3	3	-	-	-	-	-	3
CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	-	-	-	3	-	2	2	3	3	-	-	-	-	-	3
CO4	To recognize different forms of energy and apply them for suitable applications in for technological advancement and	-	-	-	3	-	2	2	3	3	-	-	-	-	-	3

	societal development.															
CO5	To demonstrate the knowledge of societal activity on the long and short term environmental issues and abide by the legal provisions, National and International laws and conventions in professional and personal activities and to identify and analyseeffect of population dynamics on human value education, consumerism and role of technology in environmental issues.	-	-	-	3	-	2	2	3	3	-	-	-	-	-	3
Overall CO		-	-	-	3	-	2	2	3	3	-	-	-	-	-	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5511	FASHION DESIGN LABORATORY	L T P C 0 0 4 2

OBJECTIVES:

To practically train the students in fashion drawing and fashion illustration techniques

LIST OF EXPERIMENTS:

1. Experimenting with solids - Men's, women's and children's
2. Experimenting with stripes - Men's, women's and children's
3. Experimenting with checks and plaids - Men's, women's and children's
4. Experimenting with florals and prints - Men's, women's and children's
5. Experimenting with colour wheel and value scale
6. Experimenting with monochromatic, complementary, analogous and triadic colours
7. Experimenting with Texture rendering

TOTAL: 60 PERIODS

OUTCOMES:

Upon completion of this practical course, the students can

CO1 - Design men's, women's and children dresses with solids, stripes and checks
CO2 - Design men's, women's and children dresses with florals and prints
CO3 - Develop colour wheel and value scale
CO4 - Experiment with various colour harmonies
CO5 - Design using texture rendering

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
CO1	Design men's, women's and children dresses with solids, stripes and checks	3	2	3	-	–	–	–	-	3	2	3	–	2	3	3
CO2	Design men's, women's and children dresses with florals and prints	3	2	3	-	–	–	–	-	3	2	3	–	2	3	3
CO3	Develop colour wheel and value scale	3	2	3	-	–	–	–	-	3	2	3	–	2	3	3
CO4	Experiment with various colour harmonies	3	2	3	-	–	–	–	-	3	2	3	–	2	3	3
CO5	Design using texture rendering	3	2	3	-	–	–	–	-	3	2	3	–	2	3	3
Overall CO		3	2	3	-	–	–	–	-	3	2	3	-	2	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5512 GARMENT CONSTRUCTION LAB II L T P C
0 0 4 2

OBJECTIVES

To train the students on construction of different types of garments

LIST OF EXPERIMENTS

1. Construct a men's formal shirt
2. Construct a men's formal trouser
3. Construct a women's skirt – any one variation
4. Construct a saree blouse
5. Construct a salwar kameez
6. Construct basic baby set
7. Construct a children's romper
8. Construct a children's frock

TOTAL: 60 PERIODS

OUTCOMES:

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

CO1 - Construct men's formal shirt and trouser
CO2 - Construct women's skirt and blouse
CO3 - Construct women's salwarkameez
CO4 - Construct basic baby set
CO5 - Construct children's romper and frock

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	Construct men's formal shirt and trouser	2	2	2	-	–	–	–	-	2	2	3	–	2	3	3
CO2	Construct women's skirt and blouse	2	2	2	-	–	–	–	-	2	2	3	–	2	3	3
CO3	Construct women's salwar kameez	2	2	2	-	–	–	–	-	2	2	3	–	2	3	3
CO4	Construct basic baby set	2	2	2	-	–	–	–	-	2	2	3	–	2	3	3
CO5	Construct children's romper and frock	2	2	2	-	–	–	–	-	2	2	3	–	2	3	3
Overall CO		2	2	2	-	–	–	–	-	2	2	3	-	2	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5601 FINANCIAL MANAGEMENT FOR APPAREL INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

To enable the students to understand

- Basics of financial management those are required for the textile industry
- Determination of cost of yarn, fabric and garment

UNIT I **9**

Costing - concepts; costing types; different methods of costing, standard costing, analysis of variance; classification of costs; preparation of cost sheet; cost profit volume analysis, breakeven analysis

UNIT II **9**

Costing of yarn, fabrics and garments; tax structure

UNIT III **9**

Techniques of investment analysis – payback period method, accounting rate of return, Discounted Cash Flow methods - IRR, NPV, PI; Depreciation – method of computing depreciation

UNIT IV **9**

Capital structure; sources and cost of capital; working capital management; Budget, types of budgets, budgeting and control in textile industry

UNIT V **9**

Tools for financial analysis and control- profit and loss account, balance sheet; financial ratio analysis - illustrations from textile industry

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Understand types and methods of costing, and preparation of cost sheet
CO2: Determine the cost of yarn, fabrics and garments
CO3: Carryout invest appraisal and calculate depreciation
CO4: Understand different sources and cost of capital, and preparation of budget
CO5: Analyze and interpret the financial statements of textile company

TEXTBOOKS:

1. Pandey I. M., “Financial Management”, Vikas Publishing House Pvt. Ltd., New Delhi, 10thEdition, 2010, ISBN: 8125937145 / ISBN: 9788125937142.
2. Bhave P.V., and Srinivasan V., “Costing Accounting to Textile Mills”, ATIRA, Ahmadabad, 1976

REFERENCES:

1. ThukaramRao M.E., “Cost and Management Accounting” NewAge International, Bangalore, 2004, ISBN: 812241513X / ISBN: 978-8122415131.
2. ThukaramRao M.E., “Cost Accounting and Financial Management” New Age International, Bangalore, 2004, ISBN: 8122415148/ ISBN: 978-8122415148.
3. Prasanna Chandra., “Financial Management - Theory and Practice”, 8th Edition, Tata McGraw- Hill Publishing Company Ltd, New Delhi, 2011, ISBN :0071078401 / ISBN: 0071078401.62
4. James C. Vanhorne., “Financial Management and Policy”, Pearson Education Asia (Low Priced Edition) 12th Edition, 2002, ISBN: 0130326577 | ISBN-13: 9780130326577.
5. Narang, G. B. S., and Kumar V., “Production and Costing”, Khanna Publishers, New Delhi,1988, ISBN: 8174092897 | ISBN-13: 9788174092892
6. AswatDamodaran., “Corporate Finance Theory and Practice”, John Wiley & Sons, 2001,ISBN: 0471283320 | ISBN-13: 9780471283324.

7. Hrishikes Bhattacharya., “Working Capital Management, Strategies and Techniques”, Prentice Hall of India Pvt. Ltd., New Delhi, 2014, ISBN: 8120349040 | ISBN-13: 9788120349049.
8. Khan and Jain, “Basic Financial Management and Practice”, Tata McGraw Hill, New Delhi, 7thEdition, 2014, ISBN: 933921305X / ISBN: 978-9339213053.
9. Kantwala D.N., “Costing and Cost Control – A Marginal Approach for Textile Industry”, Texcons, Bombay, 1977.

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Understand types and methods of costing, and preparation of cost sheet	-	3	-	-	2	2	-	2	2	2	2	2	-	2	-
CO2	Determine the cost of yarn, fabrics and garments	-	3	-	-	2	2	-	2	2	2	2	2	-	2	-
CO3	Carryout invest appraisal and calculate depreciation	-	3	-	-	2	2	-	2	2	2	2	2	-	2	-
CO4	Understand different sources and cost of capital, and preparation of budget	-	3	-	-	2	2	-	2	2	2	2	2	-	2	-
CO5	Analyze and interpret the financial statements of textile company	-	3	-	-	2	2	-	2	2	2	2	2	-	2	-
Overall CO		-	3	-	-	2	2	-	2	2	2	2	2	-	2	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5602 APPAREL PRODUCTION PLANNING AND PROCESS CONTROL **L T P C 3 0 0 3**

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 **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 sheets

UNIT II **13**

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 III **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, modern methods in cut piece distribution and tracking

UNIT IV **5**

Material management - Manufacturing Resources Planning (MRP), just in time production system (JIT), Optimised production technology (OPT), Economic order Quantity (EOQ), ABC, VED analysis in inventory control

UNIT V **9**

Quality control in finishing and packing; packing - ratio packing, solid packing, short shipment, excess shipment, calculation of volumetric weight, carton and other packing requirements; concept of AQL

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Process control in garment manufacture
CO2: Production planning, line balancing
CO3: Lay planning process
CO4: Material management techniques and
CO5: Quality control in garment manufacture

TEXTBOOKS:

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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REFERENCES:

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 | ISBN-13: 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

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Course Articulation Matrix:

Course Outcomes	Statement	PROGRAM OUTCOMES														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Understand process control	3	3	2	-	-	-	-	-	2	3	2	-	3	2	3
CO2	Production planning	3	3	2	-	-	-	-	-	2	3	2	-	3	2	3
CO3	Lay planning	3	3	3	-	-	-	-	-	3	3	3	-	3	2	2
CO4	Material management techniques	3	3	3	-	-	-	-	-	3	3	3	-	3	2	2
CO5	Quality control in garment manufacture	3	3	3	-	-	-	-	-	3	3	3	-	3	2	3
Overall CO		3	3	3	-	-	-	-	-	3	3	3	-	3	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5603 **GARMENT SIZING AND FIT** **L T P C**
3 0 0 3

OBJECTIVES:

- To enable the students to learn about human anthropometrics, sizing system and concepts of clothing fit and its evaluation.

UNIT I **9**

Human anthropometrics-terms and definitions, traditional anthropometry, three dimensional methods, international standards, land marks, body measurement devices and techniques, body scanning and its applications.

UNIT II **9**

Body shape analysis, classification of body shapes, characteristic differences among figures, posture – types, figure types- vertical, horizontal; sizing and shape requirements of children, male, female, elderly, maternity and intimate wears, clothing style selection for figure types, overcoming unrealistic body image.

UNIT III **9**

Historical development of sizing system, international sizing, principles of sizing systems, methods of sizing for mass production of clothing for men and women; mass customization-sizing technologies and application.

UNIT IV **9**

Fit-definition, influences on clothing fit, testing methods for dimensional fit, subjective rating scales and fitting guide, objective evaluation of clothing fit, analyzing poor fit – pattern alteration for fit and virtual garmenting

UNIT V **9**

Fit – work wear; sizing for military, garment drape – static, dynamic

TOTAL: 45 PERIODS

OUTCOMES:

- Upon the completion of the course the student shall be able to understand
  - CO1: human anthropometrics and latest techniques in body measurement
  - CO2: sizing for different body types
  - CO3: various sizing systems
  - CO4: concept of clothing fit, drape and pattern alterations
  - CO5: evaluation of fit.

TEXTBOOKS:

1. Fan J, Yu W and Hunter L, “Clothing Appearance and Fit”, The Textile Institute, Wood head Publishing Limited, England, 2004, ISBN:9781855737457
2. Ashdown S P, “Sizing in clothing”, The Textile Institute, Woodhead Publishing Limited,England, 2007, ISBN: 9781845690342
3. Sandra Betzina ,”Fast Fit-Easy pattern alterations for every figure”, The Taunton Press, Inc., Singapore, 2003, ISBN:978-1561586493

REFERENCES:

1. Jacob Solinger., “Apparel ProductionHandbook”, Reinhold Publications, 1998, ISBN: 1879570009 / ISBN: 978-1879570009
2. Shaeffer Claire., “Sewing for the Apparel Industry”, Prentice Hall, New Jersey, 2001, ISBN: 0321062841 | ISBN-13: 9780321062840
3. Patty Brown., and Janett Rice., “Ready-To-Wear Apparel Analysis”, Third Edition, Prentice-Hall Inc., New Jersey,2000, ISBN: 0130254347 | ISBN-13: 9780130254344
4. Chuter A.J., “Introduction to Clothing Production Management”, Blackwell Scientific Publications, Oxford, 2001, ISBN: 0632039396 | ISBN-13: 9780632039395

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Course Articulation Matrix:

Course Outcomes	Statement	PROGRAM OUTCOMES														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Human anthropometrics and latest techniques in body measurement	3	3	2	2	-	-	-	-	-	2	2	-	2	3	3
CO2	Sizing for different body types	3	3	2	2	-	–	-	-	-	2	2	-	3	3	3
CO3	Various sizing systems	3	3	2	2	-	–	-	-	-	2	2	-	3	3	3
CO4	Concept of clothing fit, drape and pattern alterations	3	3	2	2	-	–	-	-	-	2	2	-	3	2	3
CO5	Evaluation of fit.	3	3	2	2	-	–	-	-	-	2	2	-	3	2	3
Overall CO		3	3	2	2	-	-	-	-	-	2	2	-	2	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5611	FASHION PORTFOLIO DEVELOPMENT LAB	L T P C 0 0 4 2

OBJECTIVE:

To enable the students, develop a portfolio and construct a garment for the identified theme.

LIST OF EXPERIMENTS

1. Develop different silhouettes
2. Design research and conceptualization for a given theme
3. Prepare a mood board for the given theme
4. Prepare an inspiration board for the given theme
5. Prepare a colour board for the given theme
6. Develop different sketches incorporating design elements for the given theme
7. Source appropriate fabric and trims and construct 3 garments for the given theme (men/women/children garment)

TOTAL: 60 PERIODS

OUTCOMES:

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

CO1: Develop silhouettes
CO2: Design concept for the theme
CO3: Develop mood board, inspiration board and colour board
CO4: Understand and source different fabric and trims and
CO5: Translate design into garment

Course Articulation Matrix:

Course Outcomes	Statement	PROGRAM OUTCOMES														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Develop silhouettes	-	-	-	-	3	-	–	–	–	3	–	–	-	3	3
CO2	Design concept for the theme	-	-	-	-	3	-	–	–	–	3	–	–	-	3	3
CO3	Develop mood board, inspiration board and colour board	2	2	2	2	3	-	–	–	–	3	2	2	2	3	3
CO4	Understand and source different fabric and trims	2	2	2	2	-	-	–	–	–	–	2	2	2	3	3
CO5	Translate design into garment	2	2	2	2	3	2	2	–	–	–	2	2	2	3	3
Overall CO		2	2	2	2	3	2	2	–	–	3	2	2	2	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5612 **COMPUTER AIDED PATTERN MAKING LAB** **L T P C**
0 0 4 2

OBJECTIVE:

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

LIST OF EXPERIMETS

Use CAD software to develop

1. Basic Blocks for Men's and Women (top and bottom)
2. Pattern for Men's Formal shirt
3. Pattern for Men's formal trouser (pleats and Flange)
4. Pattern for Women's Tops (application of Dart manipulation principle)
5. Pattern for Women's Bottoms (skirts, pants – Added fullness techniques Gatherings and pleats)
6. Patterns for children's dresses (principles of contouring applied)
7. Patterns for dungaree and work wear
8. Patterns for close fitting body shapes
9. Graded patterns
10. Marker and optimize using digitizer
11. Reverse pattern engineering

TOTAL:60 PERIODS

OUTCOMES:

Upon completion of the course, the student will have practical experience, in using pattern making software

CO1: Basic block patterns for different wears,
CO2: Grading
CO3: Maker planning
CO4: Marker optimization
CO5: Reverse pattern engineering

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Basic block patterns for different wears,	2	3	3	-	-	-	–	2	2	2	2	-	2	2	3
CO2	Grading	2	3	3	-	-	-	–	2	2	2	2	-	2	2	3
CO3	Maker planning	2	3	3	-	-	-	–	2	2	2	2	-	2	2	3
CO4	Marker optimization	2	3	3	-	-	-	–	2	2	2	2	-	2	2	3
CO5	Reverse pattern engineering	2	3	3	-	-	-	–	2	2	2	2	-	2	2	3
Overall CO		2	3	3	-	-	–	–	2	2	2	2	-	2	2	3

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

AT5751 INDUSTRIAL ENGINEERING IN APPAREL INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about basics of industrial engineering and different tools of industrial engineering and its application in apparel industry

UNIT I

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 **9**

Methods study – introduction, approach to method study; techniques of recording; method analysis techniques; method study in garment manufacture

UNIT III **9**

Motion analysis, principles of motion economy, micro motion analysis – SIMO Chart; work measurement, time study – equipment and procedure, rating concepts

UNIT IV **9**

Work sampling techniques; work measurement applied to garment industry; Standard data- PMTS, GSD, calculation of standard allowance minutes (SAM), incentive wage system

UNIT V **9**

Ergonomics - importance, division; ergonomic principles - designing of workplace, working processes, handling material, tools and environment; ergonomic conditions - lighting, ventilation, climatic condition – temperature control, humidity control, noise control, safety measures in garment industry; site selection for garment industry; plant layout - types of layouts suitable for garment industry, methods to construct layout

TOTAL: 45 PERIODS

OUTCOMES:

- Upon the completion of the course the student shall be able to understand

CO1: Productivity concepts
CO2: Method study
CO3: Motion analysis
CO4: Work measurement
CO5: Ergonomics applied to garment industry

TEXTBOOKS:

1. George Kanwaty, “Introduction to Work Study “, ILO, Geneva, 1996, ISBN: 9221071081 |ISBN-13: 9789221071082
2. Enrick N. L., “Time study manual for Textile industry”, Wiley Eastern (P) Ltd., 1989, ISBN: 0898740444 | ISBN-13: 9780898740448
3. Khanna O. P., and Sarup A., “Industrial Engineering and Management”, Dhanpat Rai Publications, New Delhi, 2010, ISBN: 818992835X / ISBN: 978-8189928353

REFERENCES

1. Norberd Lloyd Enrick., “Industrial Engineering Manual for Textile Industry”, Wiley Eastern (P) Ltd., New Delhi, 1988, ISBN: 0882756311 | ISBN-13: 9780882756318
2. Chuter A. J., “Introduction to Clothing Production Management”, Wiley-Black well Science, U.S. A., 1995, ISBN: 0632039396 | ISBN-13: 9780632039395
3. David M. Levine., Timothy C. Krehbiel., and Mark L. Berenson., “Business Statistics: A First Course”, 7th Edition, Pearson Education Asia, New Delhi, 2015, ISBN: 032197901X | ISBN-13: 9780321979018
4. Chase., Aquilano., and Jacobs., “Production and Operations Management”, Tata McGraw- Hill, New Delhi, 8th Edition, 1999, ISBN: 0256225567 | ISBN-13: 9780256225563
5. GavrielSalvendy., “Industrial Engineering – Technology and operations management”, WileyInterscience Publications, USA, 2001, ISBN: 0471330574 | ISBN-13: 9780471330578
6. GordanaColovic., “Ergonomics in the garment industry”, Wood publishing India Pvt. Ltd., India, 2014, ISBN: 0857098225 | ISBN-13: 9780857098221

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Course Articulation Matrix:

Course Outcomes	Statement	PROGRAM OUTCOMES													
		PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	Productivity concepts	3	3	3	–	–	–	–	2	–	2	2	–	2	2	2
CO2	Method study	3	3	3	–	–	–	–	2	–	2	2	–	2	2	3
CO3	Motion analysis	3	3	3	–	–	–	–	2	–	2	2	–	2	2	3
CO4	Work measurement	3	3	3	–	–	–	–	2	–	2	2	–	2	2	3
CO5	Ergonomics applied to garment industry	2	-	-	–	–	–	–	2	–	2	2	–	2	2	2
Overall CO		3	3	3	–	–	-	–	2	-	2	2	-	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5752 APPAREL MARKETING AND MERCHANDISING L T P C
3 0 0 3

OBJECTIVE:

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

UNIT I INTRODUCTION TO APPAREL BUSINESS 9

Apparel business practices; business operations in Asian countries; business practices of Indian apparel export and retail houses

UNIT II MARKETING FOR APPAREL AND TEXTILE PRODUCTS 9

Marketing for the 21st century, 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

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, coordination and communication with the production house and export house

UNIT IV SOURCING 9

Understanding the basics of sourcing, sourcing strategy and best sourcing practice in apparel and textile businesses, supply chain and demand chain, 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

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.

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Understanding the international apparel business and roll of Asian countries in the apparel and fashion trade

CO2: Applying the concepts of marketing and merchandizing in the apparel industry in the world and India.

CO3: Understand the apparel product dynamics in a market and relating it along the value chain.

CO4: Applying the concepts of sourcing in the apparel industry, with respect to modern business practices.

CO5: Understand the apparel export and import, requirements for international operations.

TEXTBOOKS

1. Elian stone, Jean A samples, “Fashion Merchandising”, McGraw Hill Book Company, New York, 1985, ISBN: 0-07-061742-2
2. Shivaramu S.,” Export Marketing” – A Practical Guide to Exporters”, Wheeler Publishing, Ohio, 1996, ISBN: 81-7544-166-6
3. Ruth E. Glock, Grace I. Kunz ” Apparel Manufacturing Sewn Product Analysis” Fourth Edition, Pearson Prentice Hall, NJ, 2005, ISBN: 81-7758-076-0

REFERENCES:

1. Dominic Kosorin., “Introduction To Programmatic Marketing”, Dominik Kosorin, 2016, ISBN 8026096118
2. Dimitris N. Chorafas., “Integrating Erp, Crm, Supply Chain Management and Smart Materials”, Auerbach, 2001, ID 54795
3. Michael Mc Tear, Zoraida Callejas, David Griol., “The Conversational Interface- Talking to Smart Devices”, Springer Publishing, 2016, ISBN 3-319-32967-3

Course Articulation Matrix

Course Outcomes	Statement	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	Understanding the international apparel business and roll of Asian countries in the apparel and fashion trade	2	2	2	2	2	-	-	–	2	2	2	–	3	3	–
CO2	Applying the concepts of marketing and merchandizing in the apparel industry in the world and India.	2	2	2	2	2	-	-	–	2	–	2	–	3	3	–
CO3	Understand the apparel product dynamics in a market and relating it along the value chain.	2	2	2	2	2	-	-	–	2	2	2	–	3	2	2
CO4	Applying the concepts of sourcing in the apparel industry, with respect to modern business practices.	2	2	2	2	2	-	-	–	2	2	2	–	3	3	–
CO5	Understand the apparel export and import, requirements for international operations.	2	2	2	2	2	-	-	–	2	2	2	–	3	2	–
Overall CO		2	2	2	2	2	-	-	-	2	2	2	-	3	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High)respectively

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AT5001 APPAREL ACCESSORIES AND EMBELLISHMENTS L T P C

2 0 2 3

OBJECTIVES:

To enable the students to understand different types of apparel accessories used in the garment manufacture and embroidery of garments

UNIT I **6**

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

UNIT II **6**

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

UNIT III **6**

Embroideries - basic embroidery stitches – chain stitch, button hole stitch, herringbone stitch, feather stitch, lazy daisy, double knot stitch, interlacing stitch, stem stitch, French knot stitch; types of embroidery machines; Kasuti, Kasida, Kathiawar, Sindhi, Phulkari, Chikankari, Aari and Zardosi and tribal embroideries

UNIT IV **6**

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

UNIT V **6**

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

TOTAL: 30 PERIODS

Practical:

1. Embroideries - basic embroidery stitches, Aari work
2. Printing - block printing, batik, tie and dye
3. Patch work, appliqué work, bead work

TOTAL: 30 PERIODS

OUTCOMES:

Upon completion of this course, the students shall

CO1 –Know different types of garment components and trims
CO2 –Know differenty types of Zippers
CO3 –Know Embroideries - Indian and tribal
CO4 –Know about Fashion accessories
CO5 –Know about Different types of printing
CO6 - Have hands on experience on embroideries, printing and special works in garments

TEXTBOOKS:

1.Carr H., and Latham B., “The Technology of Clothing Manufacturing”, Blackwell Science, U.K.,1994, ISBN: 0632037482 | ISBN-13: 9780632037483
2. Ruth E. Glock., and Grace I. Kunz., “Apparel Manufacturing, Sewn Product Analysis”, fourth edition, Pearson Education,2004, ISBN: 0131119826 ISBN-13: 9780131119826

REFERENCES:

1. Shailaja D. Naik, “Traditional Embroideries of India”, API Publishing Corporation, New Delhi, 1996
2. Shella Paine, “Embroidered Textiles”, Thames and Hudson Ltd., U. S. A., 1990

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Different types of garment components and trims	-	3	3	–	–	3	3	–	–	2	–	–	3	–	–
CO2	Zippers	-	3	3	–	–	3	3	–	–	2	2	-	3	–	–
CO3	Embroideries - Indian and tribal	-	3	3	–	–	3	3	–	–	2	2	-	3	–	–
CO4	Fashion accessories	3	3	3	–	–	3	3	–	–	2	2	-	3	3	3
CO5	Different types of printing	3	3	3	–	–	3	3	–	–	2	2	-	3	3	3
CO6	Hand on experience on embroideries, printing and special works in garments	3	3	3	–	–	3	3	–	–	2	2	-	3	3	3
Overall CO		3	3	3	-	–	3	3	-	–	2	2	-	3	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5002 **HOME TEXTILES** **L T P C**
3 0 0 3

OBJECTIVES

To enable the students to learn about

- Various kinds of materials used as home textiles
- Recent developments in home furnishing, floor covering and other home textile products
- Finishes and Evaluation required for home textiles.

UNIT I INTRODUCTION 5

Concepts of Home textiles and its market scenario, consumer expectation from home textiles; fibers and fabrics used - Woven, nonwoven and knits; manufacturing concepts- damask, brocade, organdie, chiffon, oxford, tapestry

UNIT II HOME FURNISHING 13

Living room furnishings – types, fabric selection and design concepts; bed room furnishings- types, fabric selection and design concepts; advances in the production of different types of bed linen, bed sheets, blankets, blanket covers, comforts, comfort covers, bed spreads, mattress and mattress covers, pads, pillows; kitchen furnishing - fabric selection and finishing for dish cloth, hand towels, aprons, mittens and runners

UNIT III FLOOR COVERING AND DRAPES 13

Recent developments in manufacturing of floor coverings - hard floor coverings, resilient floor coverings; soft floor coverings – carpets and rugs, laying procedure, maintenance and care; cushion and pads; factors affecting the selection of floor covering; advances in home decoration -draperies – choice of fabrics ,curtains, finishing of draperies- tucks and pleats; types of drapery rods, hooks, tape rings and pins.

UNIT IV FINISHES USED IN HOME TEXTILES 9

Introduction, thermal draperies, protection against unpleasant odour, antimicrobial finish, moisture management finish, flame retardant finish, towel finishing;sensory perception technology; insect and mite repellent finish, antistatic finish; temperature regulated beddings

UNIT V EVALUATION OF HOME TEXTILES 5

Test methods - towels, rugs; flammability standards for curtains, test methods for pot holders and woven mittens; labelling and care instructions of home textiles

TOTAL: 45 PERIODS

OUTCOMES:

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

CO 1 - Different types of materials used as home textiles
CO 2 - Selection of fabric and design for living room, bed room and kitchen furnishings
CO 3 - Selection of floor coverings and draperies
CO 4 - Finishes used for various home textile products
CO 5 - Evaluation of home textile products

TEXTBOOKS:

1. AlexanderN.G., “Designing Interior Environment”, Mas Court Brace Covanorich, Newyork, 1972 67
2. DonserkeryK.G., “Interior Decoration in India”, D.B.Taraporeval Sons and Co. Pvt. Ltd., 1979, ISBN: 0906216338 | ISBN-13: 9780906216330

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REFERENCES:

1. Wingate J. F., and Mohler I. B., “Textile Fabrics& Their Selection”, Prentice Hall Inc., New York, 1984,ISBN: 0139128654 | ISBN-13: 9780139128653
2. Subtra Das, “Performance of home textiles”, Woodhead Publishing India Pvt.Ltd., 2010, ISBN: 0857090070 | ISBN-13: 9780857090072
3. Rowe T., “Interior Textiles Design and Developments”, Woodhead Publishing India Pvt.Ltd., 2009, ISBN: 1845693515 | ISBN-13: 9781845693510
4. Schindler W. D., and Hauser P. J., “Chemical finishing of textiles”, Woodhead Publishing, England, 2004, ISBN: 1855739054 | ISBN-13: 9781855739055

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Different types of materials used as home textiles	1	-	2	-	-	2	2	-	-	2	2	-	1	1	3
CO2	Selection of fabric and design for living room, bed room and kitchen furnishings	1	-	2	-	-	2	2	-	-	2	2	-	1	1	3
CO3	Selection of floor coverings and draperies	1	1	2	-	-	2	2	-	-	2	2	-	1	1	3
CO4	Finishes used for various home textile products	1	1	2	-	-	2	2	-	-	2	2	-	1	1	3
CO5	Evaluation of home textile products	1	2	2	-	-	2	2	-	-	2	2	-	1	1	3
Overall CO		1	1	2	-	-	2	2	-	-	2	2	-	1	1	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5003 **INTIMATE APPARELS** **L T P C**
3 0 0 3

OBJECTIVE:
To acquaint students on the design, material, accessories and sewing aspects of intimate garments

UNIT I MATERIAL **9**
Intimate apparels –classification; materials-fibre, fabric, accessories and finishes; physical and physiological requirements of intimate apparels

UNIT II MEN'S INTIMATE APPAREL **9**
Design analysis, measurements, pattern drafting of men's intimate apparel – long johns, tank top, basic shorts, knickers, bikini underwear, thong, briefs, boxer shorts and jock strap.

UNIT III WOMEN'S INTIMATE APPAREL **9**
Design analysis, measurements, pattern drafting of women's intimate apparel – petticoats, panties, camisoles, tube top, shape wear, bikini and brassier – seamless, half cup and full cup bra.

UNIT IV INTIMTE APPAREL MANUFACTURE I **9**
Intimate apparel accessories - Bra wire, hook and eye tape, ring and slider, buckle, plastic bone, elastics and sewing threads

UNIT V INTIMTE APPAREL MANUFACTURE II **9**
Sewing of intimate apparels - seams, stitches, machines; lamination; moulding and ultrasonic welding technique

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of this course, the students will have the skills essential to
CO1 - Select fibres and fabric for intimates
CO2 - Design and draft pattern for men's intimate apparel
CO3 - Design and draft pattern for women's intimate apparel
CO4 - Select required accessories
CO5 - Know about seams, stitches and seamless technology to develop intimates

TEXTBOOKS:

1. Yu W., Fan J., Harlock S.C., and Ng S. P., "Innovations and Technology of Women's Intimate Apparel", Wood head Publishing Limited, England 2006, ISBN: 0849391059 | ISBN-13: 9780849391057.
2. Ann Haggar., "Pattern Cutting for Lingerie, Beachwear and Leisurewear", Black Well Science Limited, France, 2004, ISBN: 140511858X / ISBN: 978-1405118583.

REFERENCES:

1. Winnie Yu, "Advances in Women's Intimate Apparel Technology", Wood head Publishing Limited, UK, 2016, ISBN: 978-1-78242-369-0 / ISBN: 978-1-78242-390-4.
2. Ruth E. Glock., and Grace I. Kunz., "Apparel Manufacturing, Sewn Product Analysis", fourth edition, Pearson Education,2004, ISBN: 0131119826 ISBN-13: 9780131119826.

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	Select fibres and fabric for intimates	2	2	2	-	-	-	-	-	-	2	2	-	2	2	3
CO2	Design and draft pattern for men's intimate apparel	2	2	2	-	-	-	-	-	-	2	2	-	2	2	3
CO3	Design and draft pattern for women's intimate apparel	2	2	2	-	-	-	-	-	-	2	2	-	2	2	3
CO4	Select required accessories	2	2	2	-	-	-	-	-	-	2	2	-	2	2	3
CO5	Know about seams, stitches and seamless technology to develop intimates	2	2	2	-	-	-	-	-	-	2	2	-	2	2	3
Overall CO		2	2	2	-	-	-	-	-	-	2	2	-	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5004 **APPAREL RETAIL MANAGEMENT** **LT P C**
3 0 0 3

OBJECTIVE:

To enable the students to understand the fashion business segments, retail management concepts and acquaint the students with fashion communication tools

UNIT APPREL RETAIL BUSINESS SCENARIO 9

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

UNIT II RETAIL MANAGEMENT STRATEGIES 9

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

UNIT III RETAIL MANAGEMENT DESIGN 9

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

UNIT IV VISUAL MERCHANDIZING 9

Visual merchandising as a communication tool, presentations in visual merchandising, visual merchandising and enhanced customer buying decision, interiors with respect to brand, sensory elements, signs and graphics, focal point for season and type of sale; case studies on visual merchandising, neuro marketing, augmented reality and recent trends – interactive merchandizing

UNIT V E-RETAILING 9

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

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the student shall know the

CO 1 - Concept of retail management
CO 2 - Retail management strategies
CO 3 - Design of retail management
CO 4 - Concept of visual merchandizing
CO 5 - e-commerce, s-commerce

TEXTBOOKS:

1. Gibson G. Vedamani., “Retail Management Functional Principles & Practices, Third Edition” Jaico Publishing House, 2003, ISBN -10:81-7992-151-4.
2. Martin.M. Pegler., “Visual Merchandising and Display”, (fifth edition), Fair Child Publications, 2011 , ISBN 10: 1563674459.

REFERENCES:

1. Harvey M.Deitel., Paul J.Deitel., and Kate Steinbuhler., “e-business and e-commerce for managers”, Pearson, 2011, ISBN: 0130323640 | ISBN-13: 9780130323644.
2. Efraim Turban., Jae K. Lee., David King., Ting Peng Liang., and Deborrah Turban., “Electronic Commerce –A managerial perspective”, Pearson Education Asia, 2012, ISBN : 0139752854 / ISBN: 978-0139752858.

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Course Articulation Matrix:APPAREL RETAIL MANAGEMENT

Course Outcomes	Statement	Program Outcome													
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Concept of retail management	3	3	3	-	-	–	–	3	2	2	3	–	3	–	3
CO2	Retail management strategies	–	3	3	-	-	–	–	3	2	2	3	–	3	–	3
CO3	Design of retail management	–	3	3	-	-	–	–	3	2	2	3	–	3	–	3
CO4	Concept of visual merchandizing	–	3	3	-	-	–	–	3	2	2	3	–	3	3	–
CO5	e-commerce, s-commerce	–	3	3	-	-	–	–	3	2	2	3	–	3	3	–
Overall CO		3	3	3	-	-	–	–	3	2	2	3	-	3	3	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5005	FASHION DRAPING LAB	L T P C 0 0 6 3

OBJECTIVE:

To enable the students, to learn the techniques of draping different body forms.

LIST OF EXPERIMENTS

1) Detailed measurement of dress forms
2) Preparation of Muslin for draping -Basic patterns - Front, Back, Skirt and Sleeves
3) Front Bodice with underarm - Dart, Back Bodice with neckline dart.
4) Dart variations, Pleats, Dart tucks and Gathers
5) Variations of basic skirt - One piece, Tapered, Dome, Gored and Flared
6) Male body form draping – (traditional and party wear)
7) Female body form draping- (traditional and party wear)
8) Children body form draping- (party wear)

TOTAL: 90 PERIODS

OUTCOMES:

Upon completion of this practical course, the student shall carryout

CO1: basic measurements of dress form
CO2: Muslin preparation
CO3: Dart techniques
CO4: Skirt draping
CO5: Traditional and party wear draping

Course Articulation Matrix:

Course Outcomes	Statement	PROGRAM OUTCOMES														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Understand basic measurements of dress form	-	-	2	-	3	-	-	–	2	2	2	–	-	2	2
CO2	Muslin preparation	-	-	2	-	3	–	-	–	2	2	2	–	-	2	2
CO3	Dart techniques	3	2	2	-	2	–	-	–	2	2	2	–	3	-	3
CO4	Skirt draping	3	2	2	-	2	–	-	–	2	2	2	–	3	-	3
CO5	Traditional and party wear draping	3	2	2	-	2	-	-	-	2	2	2	-	3	-	3
Overall CO		3	2	2	-	2	-	-	-	2	2	2	-	3	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5006 GARMENT FINISHING AND CARE **LT P C**
3 0 0 3

OBJECTIVE:

To enable the students to understand the functional, mechanical, denim, unconventional finishes of fabrics and garment care.

UNIT I FUNCTIONAL FINISHING I **9**

Objectives**,** types, selection of chemicals with reference to type of fabrics, process conditions and types of fibres; chemical finishing methods: application & assessment of water repellent/proof, flame retardant, heat resistant, mildew proof, moth proof, anti-static, soil release

UNIT II FUNCTIONAL FINISHING II **9**

Chemical finishing methods: application & assessment of UV protection, anti-microbial, odor control, fragrance and elastomeric finishes(without compaction), resin finishing: durable press, wash-n-wear, wrinkle free, silicone finishing.

UNIT III MECHANICAL FINISHING **9**

Peach finish, raising, calendaring: swissing, embossing, schreinering, friction calendaring & moiré effect.

UNIT IV DENIM FINISHING AND UNCONVENTIONAL FINISHING **9**

Process conditions, machineries, chemicals used for various special effects- pumice stones, acid and enzyme wash, bio-polishing & bio-stoning, sand blasting, ozone and laser fading

UNIT V GARMENT CARE **9**

Plasma treatment, finishing using micro capsules, nano and electro chemical treatment of textile materials; types and characteristics of stains, identification of stains, selection of stain removers, methods of stain removal, methods of washing, industrial washing machineries, application of soaps, detergents, bleaches, optical whiteners, stiffeners, softeners, dry cleaning agents for different fabrics; laundering procedures and care instructions adopted for cellulosic, protein and synthetic materials, storage of household linen and apparel laundries, care labeling

Total: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall have the knowledge of

CO1 - Finishing of fabrics for waterproof, flame retardant, heat resistant, mildew proof, moth proof, anti-static, soil release

CO2 - Finishing of fabrics for UV protection, anti-microbial, odor control, fragrance, durable press, wash-n-wear, wrinkle free and silicone finishing

CO3 - Mechanical finishing of fabrics

CO4 - Denim and unconventional finishing of fabrics

CO5 - Garment care

TEXTBOOKS:

1. Whittall N.S., "Laundering and Dry Cleaning", Vol.8, Textile Progress, Manchester, 1996.
2. Heywood D., “Textile Finishing”, Woodhead Publishing, UK, 2003.
3. Hall A.J., “Textile Finishing”, Elsevier Publishing Co. Ltd, USA, 1986.

REFERENCES:

1. Shenai V.A., “Technology of Textile Finishing”, Sevak Publications, Mumbai, 1995.
2. Wolfgang D. Schindler, Peter J. Hauser, “Chemical Finishing of Textiles”, Woodhead Publishing, UK, 2004.
3. Shishoo R., “Plasma Technologies for Textiles”, Woodhead Publishing, UK, 2007.

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Finishing of fabrics for waterproof, flame retardant, heat resistant, mildew proof, moth proof, anti-static, soil release	2	2	2	-	-	-	-	-	-	2	2	-	2	2	2
CO2	Finishing of fabrics for UV protection, anti-microbial, odor control, fragrance, durable press, wash-n-wear, wrinkle free and silicone finishing	2	2	2	-	-	-	-	-	-	2	2	-	2	2	2
CO3	Mechanical finishing of fabrics	2	2	2	-	-	-	-	-	-	2	2	-	2	2	2
CO4	Denim and unconventional finishing of fabrics	2	2	2	-	-	-	-	-	-	2	2	-	2	2	2
CO5	Garment care	2	2	2	-	-	-	-	-	-	2	2	-	2	2	2
Overall CO		2	2	2	-	-	-	-	-	-	2	2	-	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5071 ENTERPRISE RESOURCE PLANNING FOR APPAREL INDUSTRY

L	T	P	C
0	0	6	3

OBJECTIVE

To enable the students understand about the Enterprise Resource Planning software and its modules

List of experiments

Practice on data entry, report generation in Enterprise Resource Planningsoftware

1. Costing, order booking, MRP, purchase, production planning, production orders, inventory control, packing, shipping, scheduling, sample preparation and approval, business reports
2. ERP in apparel production – time study, cutting, production tracking, cut panel process, garment quality control, order completion, machine repairs and maintenance, reports
3. ERP in retail management – style template, finished goods barcoding, stock taking, stock inward, retail order booking, stock allocation, scan and pack, dispatch, invoice, point of sale, reports

TOTAL: 90 PERIODS

OUTCOMES:

Upon the completion of this course the students shall be able to practically carryout

CO1: Data entry in ERP software

CO2: Report generation using ERP software

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome													
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Data entry in ERP software	-	-	2	-	2	-	-	2	2	-	-	3	2	-	-
CO2	Report generation using ERP software	-	-	2	-	2	-	-	2	2	-	-	3	2	-	-
Overall CO		-	-	2	-	2	-	-	2	2	-	-	3	2	-	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5007 COMPUTER AIDED GARMENT DESIGN LAB L T P C
0 0 6 3

OBJECTIVE

To train the students in designing of garments using Adobe photoshop, Adobe Illustrator/Corel Draw

LIST OF EXPERIMENTS

1. Practice on tools and features in Adobe Photoshop
2. Practice on tools and features in Adobe Illustrator/Corel Draw
3. Creating a woven and print design using Adobe Photoshop
4. Creating a digital mood board and a color board based on a theme
5. Preparation of digital designs for children's wear and accessories
6. Preparation of digital designs for women's wear and accessories
7. Preparation of digital designs for men's wear and accessories

TOTAL :90 PERIODS

OUTCOMES:

-Upon completion of the course, the student will have practical experience in
CO1: Tools and features in designing Software
CO2:Making digital print designs using software.
CO3: Making digital mood board and colourboard using software
CO4 :Making digital designs for children's wear using software
CO5:Making digital designs for men's and women's wear using software

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Tools and features in designing Software	2	2	3	–	–	–	–	–	2	2	2	2	3	2	2
CO2	Making digital print designs using software	2	2	3	–	–	–	–	–	2	2	2	2	3	2	2
CO3	Making digital mood board and colourboard using software	2	2	3	–	–	–	–	–	2	2	2	2	3	2	2
CO4	Making digital designs for children's wearusing software	2	2	3	–	–	–	–	–	2	2	2	2	3	2	2
CO5	Making digital designs for men's and women's wear using software	2	2	3	–	–	–	–	–	2	2	2	2	3	2	2
Overall CO		2	2	2	–	–	–	–	–	2	2	2	2	3	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High)

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AT5072 PRODUCTION AND APPLICATION OF SEWING THREADS LT P C
3 0 0 3

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

UNIT I **13**
Sewing threads – property requirements for different applications; ticket numbering; characterization of sewing threads- stress–strain behaviour of sewing threads; thermal, friction behaviour of sewing threads; sewability of the thread, seam efficiency index

UNIT II **13**
Types of sewing thread – spun threads, core spun threads, filament threads; production, properties and applications

UNIT III **5**
Yarn folding, fancy yarns – types and production; metallic yarns

UNIT IV **9**
Characteristics and application of high performance sewing threads - aramid threads, ceramic threads, polypropylene threads, polyethylene threads, polytetrafluroethylene threads, fibreglass threads, other sewing threads – tencel, acrylic, linen, elastic, soluble; embroidery threads

UNIT V **5**
Physical testing of sewing threads, sewing defects related to sewing threads – assessment and control

TOTAL: 45 PERIODS

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

CO1	Production of sewing thread
CO2	Characterization of sewing thread and
CO3	Selection of sewing thread for different end uses
CO4	Testing of sewing thread
CO5	Manufacturing of fancy yarns

TEXTBOOKS:

1. Ukponmwan J.O., Mukhopadhyay A., and Chatterjee K.N., “Sewing threads”, Textile Progress, 2000, ISBN: 1870372387 | ISBN-13: 9781870372381.
2. Carl A Lawrence., “Fundamentals of Spun Yarn Technology”, CRC Press, Florida, USA, 2003, ISBN: 1566768217 | ISBN-13: 9781566768214
3. Carr H., “The Technology of Clothing Manufacture”, Blackwell Publisher, UK, 2004, ISBN: 0632021934 | ISBN-13: 9780632021932

REFERENCES:

1. Ruth E. Glock., “Apparel Manufacturing Sewn Product Analysis”, Prentice Hall, New Jersey, 2005,ISBN: 0131119826 | ISBN-13: 9780131119826
2. Jacob Solinger., “Apparel Production Handbook”, Reinhold Publications, 1998, ISBN: 1879570009 / ISBN: 978-1879570009

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3. Rao J.V., and Rajendra Kr.Gaur., “Sewing Threads: Technology, Stitches, Seams, Problems, Needles”, NITRA, 2006.
4. Gong R.H., and Wright R.M., “Fancy yarns –Their manufacture and application”, Woodhead Publishing Ltd, England, 2002, ISBN: 0849315506 | ISBN-13: 9780849315503.

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Course Articulation Matrix

Course Outcomes	Statement	Program Outcome														
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Production of sewing thread	2	2	3	2	2	2	–	–	–	2	2	2	3	2	2
CO2	Characterization of sewing thread and	2	2	3	2	2	2	–	–	–	2	2	2	3	2	2
CO3	Selection of sewing thread for different end uses	2	2	3	2	2	2	–	–	–	2	2	2	3	2	2
CO4	Testing of sewing thread	2	2	3	2	2	2	–	–	–	2	2	2	3	2	2
CO5	Manufacturing of fancy yarns	2	2	3	2	2	2	–	–	-	2	2	2	3	2	2
Overall CO		2	2	3	2	2	2	-	–	–	2	2	2	3	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5008 PROTECTIVE AND SMART GARMENTS L T P C
3 0 0 3

Objective:
To enable the students understand the concept and construction of smart and protective fabrics, intelligent textiles and interactive garments

UNIT I SMART TEXTILES I 9
Introduction, electrically active polymers materials- application of non-ionic polymer gel and elastomers for artificial muscles; Heat storage and thermo regulated textiles and clothing, thermally sensitive materials, Smart textile composites integrated with optic sensors.

UNIT II SMART TEXTILES II 9
Smart fabrics – passive, active, very smart – classification of smart materials, concept of wearable computing, basic structure of fabric used for integrating different electronic sensors

UNIT III PROTECTIVE TEXTILE FOR BALLISTIC APPLICATION 9
Ballistic protective textiles- types and application, mechanism of ballistic protective textiles; design and manufacture of ballistic protective textile; designing of body armour; testing and evaluation

UNIT IV PROTECTIVE TEXTILE FOR CHEMICAL AND THERMAL PROTECTION 9
Clothing requirements for chemical and thermal protection; designing of fibre, yarn and fabrics for chemical and thermal protection; functional finishes for chemical and thermal protection; testing and evaluation

UNIT V PROTECTIVE TEXTILE FOR MEDICAL AND RADIATION PROTECTION 9
Medical protective textiles – classification, clothing requirements, types of fibre, yarn, fabrics and finishes; testing and evaluation; radiation protective textile- types of radiation and its hazards, mechanism of radiation protection, designing textiles for radiation protection, testing and evaluation of radiation protective textiles

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of this course, the students shall have the knowledge on

CO1	Technologies used in smart textiles
CO2	Wearable electronics and smart interactive garments
CO3	Materials, construction and testing methods of ballistic protective garments
CO4	Chemical and thermal protective garments
CO5	Clothing requirement and design concepts of medical and radiation protective textiles

TEXTBOOKS:

1. Pushpa Bajaj., and Sengupta A.K., “Protective Clothing”, The Textile Institute, 1992, ISBN:1-870812 – 44-1.
2. Chellamani K. P., and Chattopadhyay D., “Yarns and Technical Textiles”, SITRA, 1999.
3. Scott R.A., “Textiles for Protection”, Wood head Publishing Limited, Cambridge, UK, ISBN: 1-85573-921-6, 2005.
4. Saville.B.P., “Physical Testing of Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN :1-85573-367-6, 1999.
5. Horrocks A.R. and Anand S.C., “Handbook of Technical Textiles”, Wood head Publishing Limited, Cambridge, UK, ISBN :1-85573-385-4, 2004.

REFERENCES:

1. Sanjay Gupta., “Smart Textiles their Production and Marketing Strategies”, NIFT, New Delhi, 2000.
2. William C. Smith., “Smart Textile Coating and Laminates”, Wood Head Publishing Series in Textiles, UK, 2010, ISBN 978-1-84569-379-4.
3. Tao X. M., “Smart Fibers, Fabrics and Clothing Fundamentals and Application”, Wood Head Publishing Ltd., October 2001, ISBN 1 855735466.

4. Mc Cann J. and Bryson D., “Smart Clothes and Wearable Technology”, Wood Head Publishing Series in Textiles, UK, 2010, ISBN-10: 1845693574

Course Articulation Matrix

Course Outcomes	Statement	Program Outcome														
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Technologies used in smart textiles	2	2	3	2	2	2	2	2	–	2	2	–	–	2	2
CO2	Wearable electronics and smart interactive garments	2	2	3	2	2	2	2	2	–	2	2	–	–	2	2
CO3	Materials, construction and testing methods of ballistic protective garments	2	2	3	2	2	2	2	2	–	2	2	–	–	2	2
CO4	Chemical and thermal protective garments	2	2	3	2	2	2	2	2	–	2	2	–	–	2	2
CO5	Clothing requirement and design concepts of medical and radiation protective textiles	2	2	3	2	2	2	2	2	-	2	2	–	–	2	2
	Overall course outcome	2	2	3	2	2	2	2	2	-	2	2	-	-	2	2

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5551 TECHNOLOGY OF NONWOVENS L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about the

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

UNIT I WEB FORMATION 9

Definitions and classification of bonded fabrics; web formation – dry and wet method of production, fibre requirements; web laying – types, influence on web structure and nonwoven properties; quality control of web

UNIT II MECHANICALBONDING 9

Bonded fabric production by mechanical bonding - needling, stitching, water-jet consolidation; factors influencing the properties; applications

UNIT III CHEMICAL AND THERMAL BONDING 9

Chemical bonding – binder polymers and bonding technologies; thermal bonding technologies; factors influencing the properties; applications

UNIT IV POLYMER–LAID WEB AND FABRIC FORMATION 9

Manufacture of spun bonded fabrics, fibre orientation in spun bonded fabrics and characterization of filament arrangement; manufacture of melt blown fabrics – fibre formation and attenuation; effect of processing parameters on fabric characteristics; applications

UNIT V FINISHING AND CHARACTERIZATION OF BONDED FABRICS 9

Dry and wet finishing; characterization – tensile, tear, bursting, thickness, abrasion, puncture, permeability, porosity; safety measures to be taken at the nonwoven industry

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Basics of nonwoven web formation techniques
CO2: Mechanical bonding technique to produce nonwovens
CO3: Chemical and thermal bonding methods to produce nonwovens and their end uses
CO4: Production of spun bonded and melt blown nonwoven fabrics.
CO5: Understand the finishing and characterization of bonded fabrics

TEXTBOOKS:

1. Lunenschloss J., Albrecht W. and David Sharp., “Nonwoven Bonded Fabrics”, Ellis HorwoodLtd., New York, 1985, ISBN: 0-85312-636-4.
2. Mrstina V. and Feigl F., “Needle Punching Textile Technology”, Elsevier, New York, 1990,ISBN: 0444988041 | ISBN-13: 9780444988041

REFERENCES:

1. Dharmadhikary R. K., Gilmore T. F., Davis H. A. and Batra S. K., “Thermal Bonding ofNonwoven Fabrics”, Textile Progress, Vol.26, No.2, Textile Institute Manchester, 1995, ISBN:1870812786.
2. Jirsak O. and Wadsworth L. C., “Nonwoven Textiles”, Textile Institute, Manchester, 1999,ISBN: 0 89089 9788.
3. Russell S., “Hand Book of Nonwovens”, Textile Institute, Manchester, 2004, ISBN: 1855736039.
4. Chapman R., “Applications of Nonwovens in Technical Textiles”, Textile Institute,Manchester, 2010, ISBN: 1 84569 4376
5. Abhijit Majumdar, Apurba Das, R.Alagirusamy and V.K.Kothari., “Process Control in Textile Manufacturing”, Wood Head Publishing Limited, Oxford, 2013, ISBN: 978-0-85709-027-0.

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Basics of nonwoven web formation techniques	3	3	2	2	2	2	-	-	2	2	2	2	2	2	3
CO2	Mechanical bonding technique to produce nonwovens	3	3	2	2	2	2	-	-	2	2	2	2	2	2	3
CO3	Chemical and thermal bonding methods to produce nonwovens and their end uses	3	3	2	2	2	2	-	-	2	2	2	2	2	2	3
CO4	Production of spun bonded and melt blown nonwoven fabrics.	3	3	2	2	2	2	-	-	2	2	2	2	2	2	3
CO5	Understand the finishing and characterization of bonded fabrics	3	3	2	2	2	2	-	-	2	2	2	2	2	2	3
Overall CO		3	3	2	2	2	2	-	-	2	2	2	2	2	2	3

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5075 CLOTHING COMFORT L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about the

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

UNIT I **9**

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

UNIT II **9**

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

UNIT III **9**

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

UNIT IV **9**

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

UNIT V **9**

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

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Different phenomena in comfort of fabric
CO2: Physiological comfort with respect to clothing
CO3: Thermo physiological comfort requirements of human and the role of clothing
CO4: Correlate the behavior of different fabric in relation to heat and moisture transfer
CO5: Correlate the property of the fabric with comfort to the wearer

TEXTBOOKS:

1. Hassan M. Behery., "Effect of Mechanical and Physical Properties on Fabric Hand", Wood head Publishing Ltd.,2005, ISBN: 1855739186 | ISBN-13: 9781855739185
2. Li Y., "The Science of Clothing Comfort", Textile Progress 31:1-2, Taylor and Francis, UK, 2001, ISBN: 1870372247 | ISBN-13: 9781870372244

REFERENCES:

1. Laing R.M., and Sleivert G.G., "Clothing, Textile and Human Performance" Textile Progress 32:2, The Textile Institute, 2002, ISBN: 1870372514 | ISBN-13: 9781870372510.
2. ApurbaDas.,andAlagirusamy R., "Science in clothing comfort", Wood head Publishing India Pvt. Ltd., India, 2010, ISBN: 1845697898 | ISBN-13: 9781845697891
3. Guowen Song., "Improving comfort in clothing", Wood head Publishing Ltd., UK, 2011, ISBN: 1845695399 | ISBN-13: 9781845695392
4. Ukponmwan J.O., "The Thermal-insulation Properties of Fabrics", Textile Progress 24:4, 1-54, Taylor and Francis, UK, 1993, ISBN: 1870812654 | ISBN-13: 9781870812658

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	Different phenomena in comfort of fabric	2	2	3	3	3	2	2	-	-	2	2	-	2	2	3
CO2	Physiological comfort with respect to clothing	2	2	3	3	3	2	2	-	-	2	2	-	2	2	3
CO3	Thermo physiological comfort requirements of human and the role of clothing	2	2	3	3	3	2	2	-	-	2	2	-	2	2	3
CO4	Correlate the behavior of different fabric in relation to heat and moisture transfer	2	2	3	3	3	2	2	-	-	2	2	-	2	2	3
CO5	Correlate the property of the fabric with comfort to the wearer	2	2	3	3	3	2	2	-	-	2	2	-	2	2	3
Overall CO		2	2	3	3	3	2	2	-	-	2	2	-	2	2	3

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5009 APPLICATION OF STATISTICS IN APPAREL INDUSTRY L T P C
2 0 2 3

OBJECTIVE:
To enable students to learn about application of statistical tools in garment industry

UNIT IHYPOTHESIS TESTING **6**
Testing of hypothesis – z, t, F, chi square, p values relevant to garment industry

UNIT II ANALYSIS OF VARIANCE AND NON PARAMETRIC TESTS **6**
ANOVA of different models; non parametric tests relevant to garment industry

UNIT III CONTROL CHARTS **6**
Construction of control charts and interpretation – illustrations from garment industry

UNIT IV DESIGN OF EXPERIMENTS **6**
2^K full factorial design; Box-Behnken design; response surface methodology; construction of experiments related to garment industry and interpretation of results

UNIT V APPAREL APPLICATIONS **6**
Balancing of machinery, costing of fabric and garment, budgeting for garment manufacturing unit

TOTAL:30 PERIODS

LAB EXPERIMENTS:
Conducting following experiments using software

- Mean, standard deviation, Z test, T test, Chi square test, ANOVA test
- Construction of control charts
- Developing Response surface methodology graphs and interpretation
- Balancing of machinery
- Costing of fabrics
- Costing of apparels
- Preparation of budget for apparel unit

TOTAL:30 PERIODS

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

CO1: Understand the probability distribution
CO2: Use the hypothesis testing for acceptance sampling
CO3: Use the variance and nonparametric tests
CO4: Use of control charts for understanding the process
CO5: Design the experiment, conduct statistical tests and analyse the results to arrive at the conclusion.

TEXTBOOKS:

1. Montgomery D.C., “Introduction to Statistical Quality Control”, John Wiley and Sons, Inc., Singapore, 2002, ISBN: 997151351X.
2. Leaf G.A.V., “Practical Statistics for the Textile Industry, Part I and II”, The Textile Institute, Manchester, 1984, ISBN:0900739517.

REFERENCES:

1. Douglas C. Montgomery, “Design and analysis of experiments”, John Wiley & Sons, Inc, Singapore, 2000, ISBN 9971 51 329 3

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2. Ronald D. Moen, Thomas W. Nolan, Lloyd P. Provost, “Quality improvement through planned experimentation’, McGraw-Hill, 1998, ISBN 0-07-913781-4

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Understand the probability distribution	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2
CO2	Use the hypothesis testing for acceptance sampling	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2
CO3	Use the variance and nonparametric tests	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2
CO4	Use of control charts for understanding the process	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2
CO5	Design the experiment, conduct statistical tests and analyse the results to arrive at the conclusion.	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2
	Overall CO	2	3	3	3	2	-	-	2	-	2	2	2	3	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5010	BRAND MANAGEMENT	L T P C 3 0 0 3

OBJECTIVE:

To introduce the students the concept of brand, brand building, branding strategies and legal issues in brand management

UNIT I **9**

Product – definition, types; product line, product mix; new product development; estimating market and sales potential, sales forecasting

UNIT II **13**

Brand – definition, evolution, importance; product vs. brand; terminologies used in branding; branding –creation, challenges, understanding consumer, competition, components; brand identity - brand naming, logos, characters, slogans, tools to maintain identity, illustrations from apparel industry

UNIT III **9**

Brand Building: brand insistence model; advertising – definition, objectives, modes, economic and ethics; non-traditional marketing approach

UNIT IV **9**

Branding strategies; brand extension, brand revitalization, brand repositioning, brand recall, brand elimination, brand imitation

UNIT V **5**

Brand equity measurement systems; legal issues in brand management; global branding

TOTAL:45 PERIODS

OUTCOMES:

On completion of this course, the students would have the knowledge on

CO1 Product mix, sales forecasting
CO2 Basics of branding and terminologies used
CO3 Brand building
CO4 Different branding strategies and effective formulation of strategies
CO5 Legal issues related to brand management and global branding

TEXTBOOKS

1. Brad Van Auken, “Branding”, Jaico Publishing House, Mumbai, India, 2010, ISBN: 81-7992668-0
2. Mahim Sagar, Deepali Singh, Agrawal D.P., Achintya Gupta, “Brand Management”, Ane Books India Pvt. Ltd., India, 2009, ISBN: 8180522830

REFERENCE

1. Harsh V. Verma, “ Brand Management”, Excel Books, New Delhi, India, 2004
2.Philip Kotler. Waldemar Pfoertsch ,”B2B Brand Management” Springer Berlin Heidelberg 2006,ISBN -10 3-540-25360-2

Course Articulation Matrix

Course Outcomes	Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Product mix, sales forecasting	1	1	-	-	-	-	2	3	-	3	3	-	3	3	-
CO2	Basics of branding and terminologies used	1	1	-	-	-	-	2	3	-	3	3	-	3	3	-
CO3	Brand building	1	1	-	-	-	-	2	3	-	3	3	-	3	3	-
CO4	Different branding strategies and effective formulation of strategies	1	1	-	-	-	-	2	3	-	3	3	-	3	3	-
CO5	Legal issues related to brand management and global branding	1	1	-	-	-	-	2	3	-	3	3	-	3	3	-
Overall CO		1	1	-	-	-	-	2	3	-	3	3	-	3	3	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5071 OPERATIONS RESEARCH FOR TEXTILE INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

To enable the students to learn about

- Various operations research (OR) methods that can be applied in the textile industry
- Expressing of problems arising in the textile industry in appropriate Operations Research formats
- Methods of solving such Operations Research problems

UNIT I **9**

Introduction – History of Operations Research, Scope of Operation Research, applications and limitations; Linear programming problem – construction, solution by graphical method, the Simplex method and its extension by the Big M method; integer programming – introduction; application of the LP technique in the field of Textile technology

UNIT II **9**

Transportation problem – construction, initial basic feasible solution – North West Corner rule, lowest cost entry method, Vogel's Approximation Method; the optimality test - MODI method, stepping stone method; transshipment problem

UNIT III **9**

The Assignment problem – construction, solution by Hungarian method, application in the textile industry; sequencing problems; Decisions theory - decisions under assumed certainty, decision under risk, decision under uncertainty, illustrations from textile industry

UNIT IV **9**

Replacement analysis; inventory control – ABC, VED analysis, EOQ – application in textile industry, simulation-introduction, Monte Carlo method

UNIT V **9**

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

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Design Operations Research problems from the cases arising in the Textile Industry and determine solution for linear programming problems

CO2: Construct and solve transportation problems

CO3: Construct and solve assignment problems and understand decision making under different conditions.

CO4: Carryout replacement analysis and inventory control

CO5: Construct and solve project scheduling and leveling by PERT and CPM techniques

TEXTBOOKS:

1. Ronald L. and Rardin., "Optimization in Operations Research", Pearson Education, 1998,ISBN: 0023984155 | ISBN-13: 9780023984150
2. Srivastava U.K., Shenoy G.V., and Sharma S. C., "Quantitative Techniques for ManagerialDecisions", Second Edition, New Age International (P) Ltd., 2007, ISBN: 0470273755 | ISBN- 13: 9780470273753

REFERENCES:

1. Frederick S. Hillier., Gerald J. Lieberman., Frederick Hillier., and Gerald Lieberman.,"Introduction to Operations Research", McGraw-Hill International Edition, 8th Edition, 2004, ISBN: 0073017795 / ISBN: 978-0073017792
2. Hamdy A Taha., "Operations Research – An Introduction", Prentice Hall, 9thEdition, 2010 ISBN: 013255593X | ISBN-13: 9780132555937.
3. Fabrycky W. J.,Ghare P. M., and Torgersen P. E., "Applied Operation Research andManagement Science", Prentice Hall, New Jersey, 1984, ISBN: 013041459X / ISBN: 9780130414595.

4. Panneerselvam R., “Operations Research”, Prentice-Hall of India Pvt. Ltd; 2nd Edition, 2004,ISBN : 8120319230 / ISBN: 978-8120329287
5. Tulsian P.C., “Quantitative Techniques Theory and Problems”, Dorling Kindersley (India) Pvt.Ltd., 2006, ISBN: 8131701867 | ISBN-13: 9788131701867

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Design Operations Research problems from the cases arising in the Textile Industry and determine solution for linear programming problems	2	2	3	3	2	-	-	2	-	2	2	-	2	2	2
CO2	Construct and solve transportation problems	2	2	3	3	2	-	-	2	-	2	2	-	2	2	2
CO3	Construct and solve assignment problems and understand decision making under different conditions.	2	2	3	3	2	-	-	2	-	2	2	-	2	2	2
CO4	Carryout replacement analysis and inventory control	2	2	3	3	2	-	-	2	-	2	2	-	2	2	2
CO5	Construct and solve project scheduling and leveling by PERT and CPM techniques	2	2	3	3	2	-	-	2	-	2	2	-	2	2	2
Overall CO		2	2	3	3	2	-	-	2	-	2	2	-	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5072 SUPPLY CHAIN MANAGEMENT FOR TEXTILE INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

- To provide an insight on the fundamentals of supply chain networks, tools and techniques.
- To train the students to new and recent developments in supply chains, e-business and information technology

UNIT I **9**

Basic principles of supply chain management and logistics, supply chain models, supply chain for volatile market; supply chain drivers and metrics in apparel industries; roll of supply chain in the textile and apparel industries' financial stability.

UNIT II **9**

Planning supply and demand in apparel production house, managing economies of scale, supply cycle and inventory levels; managing uncertainty in supply chain, safety pricing and inventory; make vs buy decision, make vs hire decision; geographical identification of suppliers, supplier evaluation, supplier selection, contract negotiations and finalization.

UNIT III **9**

Distribution network and design for global textile and apparel products, models of distribution – facility location and allocation of capacity, uncertainty on design and network optimization; the role of transportation in supply chain, modes of transportation, characteristics of transportation, transport design options for global textile and apparel network, trade-off in transport design, risk management in transportation, transport decision in practice for textile and apparel industries.

UNIT IV **9**

Coordination in supply chain- the bullwhip effect, forecasting, obstacles to coordination in supply chain; supply chain management for apparel retail stores, high fashion fad; supply chain in e-business and b2b practices

UNIT V **9**

Import - export management, documentation, insurance, packing and foreign exchange; methods of payments – domestic, international, commercial terms; dispute handling modes and channels; supply chain and Information system; customer relationship management

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall have the

CO1 Knowledge of the framework and
CO2 Knowledge on scope of supply chain networks and
CO3 Knowledge on its functions in the industry
CO4 Capacity to develop clear, concise and organized approach to operations management
CO5 Basic knowledge on the shipment procedure

TETBOOKS:

1. David Simchi-Levi., Philip Kaminsky., and Edith Simchi-Levi., "Designing and Managing the Supply Chain: Concepts, Strategies, and Cases", 3rd Edition, Tata McGraw-Hill, 2012, ISBN: 0073341525 / ISBN: 978-0073341521
2. Altekar Rahul V., "Supply Chain Management-Concept and Cases", PHI, 2005, ASIN: B00K7YGX2S

REFERENCES:

1. Janat Shah., "Supply Chain Management – Text and Cases", Pearson Education, 2009, ISBN: 8131715175 | ISBN-13: 9788131715178
2. Peter Meindl., Kalra D. V., Kalra D., and Sunil Chopra "Supply Chain Management-Strategy Planning and Operation", Pearson Education, 2010, ISBN: 8131730719 | ISBN-13: 9788131730713.

Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	Knowledge of the framework and	2	2	3	3	2	-	-	-	-	2	2	2	2	2	2
CO2	Knowledge on scope of supply chain networks and	2	2	3	3	2	-	-	-	-	2	2	2	2	2	2
CO3	Knowledge on its functions in the industry	2	2	3	3	2	-	-	-	-	2	2	2	2	2	2
CO4	Capacity to develop clear, concise and organized approach to operations management	2	2	3	3	2	-	-	-	-	2	2	2	2	2	2
CO5	Basic knowledge on the shipment procedure	2	2	3	3	2	-	-	-	-	2	2	2	2	2	2
Overall CO		2	2	3	3	2	-	-	-	-	2	2	2	2	2	2

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5073 TEXTILE AND APPAREL EXIM MANAGEMENT L T P C
3 0 0 3

OBJECTIVE:

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

UNIT I **5**

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

UNIT II **5**

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

UNIT III **9**

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

UNIT IV **13**

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

UNIT V **13**

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

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, the student shall have the knowledge on

CO1	Textile and apparel market
CO2	International market for home textiles and carpets
CO3	International market for woven, knitted and leather garments
CO4	Marketing strategies
CO5	global marketing strategies and EXIM policy and procedures

TEXTBOOKS:

1. Kapoor D.C., “Export Management”, Vikas Publishing House Pvt. Ltd., 2009, ISBN: 8125909397 / ISBN: 978-8125909392
2. Govindan N.S., “Indirect Taxes Made Easy”, C. Sitaraman& Co., 2014, ASIN: B00HYVS32K

REFERENCES:

1. Charles W.I. Hill., and Arun Kumar Jain., “International Business”, 10th Edition, Tata McGraw Hill, 2014, ISBN: 007811277X / ISBN: 978-0078112775.
2. John D. Daniels., and Lee H. Radebaugh., “International Business”, 15th Edition, Pearson Education Asia, New Delhi, 2014, ISBN: 0133457230 / ISBN: 978-0133457230.
3. Aswathappa K., “International Business”, 6th Edition, Tata McGraw Hill, 2015, ISBN: 933922258X / ISBN: 978-9339222581.
4. Michael R. Czinkota., Ilkka A. Ronkainen., and Michael H.,Moffet, “International Business”,8th Edition, Wiley, 2010, ISBN: 0470530650 / ISBN: 978-0470530658
5. Aravind V. Phatak., Rabi S. Bhagat., and Roger J. Kashlak., “International Management”, 2nd Edition, Tata McGraw Hill, 2008, ISBN: 0073210579 / ISBN : 978-0073210575
6. OdedShenkar., and YaongLuo., “International Business”,3rd Edition, Routledge, 2014, ISBN : 0415817137 / ISBN : 978-0415817134
7. Datey V.S., “Indirect Taxes”, 34th Edition, Taxmann Publications, 2015, ISBN: 9350715570 /ISBN: 9789350715574.

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Textile and apparel market	-	-	3	3	2	-	-	-	-	2	2	2	2	-	-
CO2	International market for home textiles and carpets	-	-	3	3	2	-	-	-	-	2	2	2	2	-	-
CO3	International market for woven, knitted and leather garments	-	-	3	3	2	-	-	-	-	2	2	2	2	-	-
CO4	Marketing strategies	-	-	3	3	2	-	-	-	-	2	2	2	2	-	-
CO5	Global marketing strategies and EXIM policy and procedures	-	-	3	3	2	-	-	-	-	2	2	2	2	-	-
Overall CO		-	-	3	3	2	-	-	-	-	2	2	2	2	-	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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TT5074 TOTAL QUALITY MANAGEMENT FOR TEXTILE INDUSTRY L T P C
3 0 0 3

OBJECTIVES:

- To enable the students to understand about total quality management, different TQM tools and techniques and Quality standards
- To train the students to apply TQM tools in textile industry

UNIT I INTRODUCTION 9

Introduction - need for quality - Evolution of quality - Definition of quality - Dimensions of product and service quality - Basic concepts of TQM – TQM Framework - Contributions of Quality Gurus – Barriers to TQM – Cost of Quality.

UNIT II TQM PRINCIPLES 9

Quality statements - customer focus –customer orientation, customer satisfaction, Customer complaints, customer retention - continuous process improvement – PDCA cycle, 5S, kaizen-supplier partnership – partnering, Supplier selection, supplier rating.

UNIT III TQM TOOLS & TECHNIQUES I 13

The seven traditional tools of quality – new management tools – Six-sigma: Concepts, methodology, applications to spinning, weaving, chemical processing and garment industries– bench marking – reason to bench mark, bench marking process – FMEA – Stages, types; Quality circles – Quality Function Deployment (QFD) – Taguchi quality loss function – TPM – concepts, improvement needs – performance measures – BPR; application of TQM tools in textile industry

UNIT IV LEAN MANUFACTURING, QUALITY SYSTEMS 14

Need for ISO 9000-ISO 9000-2000 quality system – elements, documentation, quality auditing; OHSAS 18000, ISO 14000 – concepts, requirements and benefits - quality council – leadership, employee involvement – motivation, empowerment, team and teamwork, recognition and reward; lean manufacturing – overview, principle, fundamental lean tools; waste – definition, types; waste management in apparel industry- identification and control; inventory control; kanban flow; flexible manufacturing concept

TOTAL: 45 PERIODS

OUTCOMES:

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

CO1: Understand the principle of TQM,
CO2: Differentiate different TQM tools and techniques
CO3: Develop innovative tools to implement TQM in the textile industry
CO4: Understand lean manufacturing system applied to textile industry

TEXTBOOKS:

1. Bruce A. Henderson and Jorge L. Larco, “Lean Transformation”, The Oaklea Press, 1999
2. Don Topping, Tom Luyster, and Tom Shuker, “Value Stream Management”, Productivity Press, 2002

REFERENCES:

1. Dale H.Besterfiled., “Total Quality Management”, Pearson Education Asia, Third Edition, Indian Reprint, 2006, ISBN: 0130306517 | ISBN-13: 9780130306517
2. James R.Evans., and William M. Lindsay., “The Management and Control of Quality”, (6thEdition), South-Western (Thomson Learning), 2005, ISBN: 0324202237 | ISBN-13: 9780324202236
3. Oakland J.S., “TQM – Text with Cases”, Butterworth – Heinemann Ltd., Oxford, Third Edition, 2003, ISBN: 0750657405 | ISBN-13: 9780750657402
4. SuganthiL., and Anand Samuel., “Total Quality Management”, Prentice Hall (India) Pvt.Ltd.2006, ISBN: 8120326555 / ISBN: 978-8120326552.

5. Janakiraman B., and Gopal R.K., “Total Quality Management–Text and Cases”,Prentice Hall (India) Pvt. Ltd., 2006, ISBN: 8120329953 | ISBN-13: 9788120329959
6. Ronald G. Askin and Jeffrey B. Goldberg, “Design and Analysis of Lean Production Systems”, John Wiley & Sons, 2003

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome													
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	Understand the principle of TQM	2	2	-	-	2	2	2	2	2	2	2	2	3	3	-
CO2	Differentiate different TQM tools and techniques	2	2	-	-	2	2	2	2	2	2	2	2	3	3	-
CO3	Develop innovative tools to implement TQM in the textile industry Understand lean manufacturing system applied to textile industry	2	2	-	-	2	2	2	2	2	2	2	2	3	3	-
CO4	Understand the lean manufacturing system	2	2	-	-	2	2	2	2	2	2	2	2	3	3	-
Overall CO		2	2	-	-	2	2	2	2	2	2	2	2	3	3	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5011 **ENTREPRENEURSHIP IN APPAREL MANUFACTURE**

L T P C
3 0 0 3

OBJECTIVE

- To enable the students to understand the importance of Entrepreneurship and the role of government in entrepreneurial development

Unit I **9**

Entrepreneur– Introduction, characteristics of a successfulentrepreneur, discision making process, functions, types, social entrepreneur

Unit II **9**

Factors affecting entrepreneurship growth – economic and non-economic factors, government initiatives and policies, entrepreneurial motivation, and entrepreneurial competence

Unit III **9**

Boutique -entrepreneur, boutique business, types; business plan - survey, selection of type of boutique, SWOC analysis; opportunities in embroidery, embellishments and accessories, printing, home textiles, commercial laundries

Unit IV **9**

Preparing project proposal; management of intial investment; design of location and layout; infrastructure selection; line balancing and selection of machinery

Unit V **9**

Organizational structure - manpower selection; developing standard operating procedure; sourcing of inventory and management; working capital management; legal approval, waste management

TOTAL:45 PERIODS

OUTCOMES:

Upon the completion of this course the students shall be able to understand the

CO1 –Basics of Entrepreneurship
CO2: Factors affecting Entrepreneurship growth and their problems
CO3: Boutique – SWOC analysis
CO4- Preparation of project proposal
CO5 - Legal aspects in entrepreneurship

TEXTBOOKS:

1. S.S.Khanka ―Entrepreneurial Development S.Chand and Company Ltd.,2008
2. Satish Taneja, Entrepreneur Development ; New Venture Creation,2010
3. Vasanth Desai ―Dynamics of Entrepreneurial Development and Management‖ Himalaya Publishing House.2011

REFERENCES:

1. N.P.Srinivasan and G.P. Gupta ―Entrepreneurial Development‖ Sultanchand and Sons.,2008
2. P.Saravanavelu ―Entrepreneurship Development‖ Eskapee publications,2008.
3. Intellectual Property Rights Text and Case, by Dr. R. Radhakrishnan and Dr.S. Balasubramanian, Excel Books, 2008, ISBN: 978-81-7446-609-9

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Course Articulation Matrix:

Course Outcomes	Statement	Program Outcome														
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	The factors affecting Entrepreneurship growth and their problems	2	2	-	-	-	-	-	2	3	2	2	2	-	3	3
CO2	The importance of Entrepreneurial Development programmes	2	2	-	-	-	-	-	2	3	2	2	2	-	3	3
CO3	The projects identification, selection and formulation procedure	2	2	-	-	-	-	-	2	3	2	2	2	-	3	3
CO4	Plant layout and line balancing	2	2	-	-	-	-	-	2	3	2	2	2	-	3	3
CO5	Indicate the role of government in entrepreneurial development	3	2	-	-	-	-	-	2	3	2	2	2	-	-	-
Overall CO		2	2	-	-	-	-	-	2	3	2	2	2	-	3	3

1, 2 and 3 are correlation levels with weightingsas Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AT5012 **HUMAN RESOURCE MANAGEMENT** **LT P C**
3 0 0 3

OBJECTIVE

To enable the students understand various aspects of human resources management and different acts related to personnel management

UNITI **9**

Human resource development systems - Indian society in transition, understandingtheconceptsofHRDpast,presentandfuture,strategiesadopted,structure,objectivesandworking oftheHRDsysteminIndiaandabroad,roleofHRmanagersintextileandapparelindustries.

UNITII **9**

Humanresourceplanningobjectivesofplanningonthemacrolevel,demandforecastingofHRplanning,MIS inHRplanning,futureskillmapping,humanresourceoutsourcing,recruitmentandprocessesinvolved in textile and apparel industries, induction; training objectives, methods, carrier planning, performance and potential appraisal

UNITIII **9**

Job- analysis, description, evaluation, enrichment; performance measurement-objectives, methods, multi-skill development, motivation; organized labour, understanding groups, development,cohesion,alienation,groupworkbehaviour&managinginternationalworkforce

UNITIV **9**

Compensation, wagepolicy, industrial pay-structure, types, components, lawsandmethodsofpayment;methodsofwagefixationinatextilemillandapparelunits;lawsgoverning employeebenefitsandwelfare,incentives,overtime,bonus,costtothecompany

UNITV **9**

Different Acts governinglabourwelfareandemployment;employeediscipline-disciplinaryactions, procedures, suspension, dismissal andretrenchment, rolloftradeunions,collectivebargaining,industrialdemocracyandworkersparticipationin management,related case studies.

TOTAL:45PERIODS

OUTCOMES:

CO 1 Uponcompletionofthiscourse,thestudentsshallbeabletounderstand
CO 2 role of hr managers and hrd system in india
CO 3 recruitment and training in textile industry
CO 4 job analysis, managing organized labour and international labour
CO 5 compensation, wage policy
CO 6 government acts relatedto labour management

TEXTBOOKS:

1. Decenzo.andRobbins., “Human Resource Management”, 10th Edition,Wiley,2010,ISBN:0470169680/ISBN:978-0470169681
2. Dessler., andGary.,“Human Resource Management”, Pearson Education Limited,2007,ISBN:0134235452| ISBN-13:9780134235455
3. MamoriaC.B.,“Personnel Management”, Himalaya Publishing Company, 2007,ISBN:8184888082/ISBN:978-8184888089

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REFERENCES:

1. Bernadin.,"Human Resource Management", 6th Edition, Tata McgrawHill , 2006,ISBN: 0078029163/ISBN:978-0078029165
2. EugenceMckenna., andNicBeach.,"Human Resource Management",2nd Edition,Pearson EducationLimited,2008,ISBN:0273694189/ISBN:978-0273694182
3. Wayne Cascio.,"Managing Human Resource",9th Edition, McGraw Hill,2012, ISBN:0078029171 ISBN-13:9780078029172

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Course Outcomes	Statement	Program Outcome													
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO 3
CO1	Role of HR managers and HRD system in India	2	2	2	-	-	-	-	2	3	2	2	-	2	3	-
CO2	Recruitment and training in textile industry	2	2	2	-	-	-	-	2	3	2	2	-	2	3	-
CO3	Job analysis, managing organized labour and international labour	2	2	2	-	-	-	-	2	3	2	2	-	2	3	-
CO4	Compensation, wage policy	2	2	2	-	-	-	-	2	3	2	2	-	2	3	-
CO5	Government Acts related to labour management	3	-	2	-	-	-	-	2	3	2	2	-	2	-	-
Overall CO		2	2	2	-	-	-	-	2	3	2	2	-	2	3	-

1, 2 and 3 are correlation levels with weightings as Slight (Low), Moderate (Medium) and Substantial (High) respectively

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AUDIT COURSES (AC)

AD5091 CONSTITUTION OF INDIA L T P C
3 0 0 0

OBJECTIVES:

- Teach history and philosophy of Indian Constitution.
- Describe the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- Summarize powers and functions of Indian government.
- Explain emergency rule.
- Explain structure and functions of local administration.

UNIT I INTRODUCTION 9

History of Making of the Indian Constitution-Drafting Committee- (Composition & Working) - Philosophy of the Indian Constitution-Preamble-Salient Features

UNIT II CONTOURS OF CONSTITUTIONAL RIGHTS & DUTIES 9

Fundamental Rights-Right to Equality-Right to Freedom-Right against Exploitation Right to Freedom of Religion-Cultural and Educational Rights-Right to Constitutional Remedies Directive Principles of State Policy-Fundamental Duties

UNIT III ORGANS OF GOVERNANCE 9

Parliament-Composition-Qualifications and Disqualifications-Powers and Functions-Executive President-Governor-Council of Ministers-Judiciary, Appointment and Transfer of Judges, Qualifications Powers and Functions

UNIT IV EMERGENCY PROVISIONS 9

Emergency Provisions - National Emergency, President Rule, Financial Emergency

UNIT V LOCAL ADMINISTRATION 9

District's Administration head- Role and Importance-Municipalities- Introduction- Mayor and role of Elected Representative-CEO of Municipal Corporation-Pachayati raj- Introduction- PRI- Zila Pachayat-Elected officials and their roles- CEO ZilaPachayat- Position and role-Block level-Organizational Hierarchy (Different departments)-Village level- Role of Elected and Appointed officials-Importance of grass root democracy

TOTAL: 45 PERIODS

OUTCOMES:

CO1: Able to understand history and philosophy of Indian Constitution.
CO2: Able to understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
CO3: Able to understand powers and functions of Indian government.
CO4: Able to understand emergency rule.
CO5: Able to understand structure and functions of local administration.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1									✓			✓
CO2									✓			✓
CO3									✓			✓
CO4									✓			✓
CO5									✓			✓

TEXTBOOKS:

1. Basu D D, Introduction to the Constitution of India, Lexis Nexis, 2015.
2. Busi S N, Ambedkar B R framing of Indian Constitution, 1st Edition, 2015.
3. Jain M P, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. The Constitution of India (Bare Act), Government Publication,1950

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AD5092 **VALUE EDUCATION** **L T P C**
3 0 0 0

OBJECTIVES:

- Develop knowledge of self-development
- Explain the importance of Human values
- Develop the overall personality through value education
- Overcome the self destructive habits with value education
- Interpret social empowerment with value education

UNIT I INTRODUCTION TO VALUE EDUCATION 9

Values and self-development –Social values and individual attitudes, Work ethics, Indian vision of humanism, Moral and non- moral valuation, Standards and principles, Value judgements

UNIT II IMPORTANCE OF VALUES 9

Importance of cultivation of values, Sense of duty, Devotion, Self-reliance, Confidence, Concentration, Truthfulness, Cleanliness. Honesty, Humanity, Power of faith, National Unity, Patriotism, Love for nature, Discipline

UNIT III INFLUENCE OF VALUE EDUCATION 9

Personality and Behaviour development - Soul and Scientific attitude. Positive Thinking, Integrity and discipline, Punctuality, Love and Kindness, Avoid fault Thinking, Free from anger, Dignity of labour, Universal brotherhood and religious tolerance, True friendshipHappiness Vs suffering, love for truth.

UNIT IV REINCARNATION THROUGH VALUE EDUCATION 9

Aware of self-destructive habits, Association and Cooperation, Doing best for saving nature Character and Competence –Holy books vs Blind faith, Self-management and Good health, Science of reincarnation

UNIT V VALUE EDUCATION IN SOCIAL EMPOWERMENT 9

Equality, Non violence, Humility, Role of Women, All religions and same message,Mind your Mind, Self-control, Honesty, Studying effectively

TOTAL: 45 PERIODS

OUTCOMES:

CO1 – Gain knowledge of self-development
CO2 – Learn the importance of Human values
CO3 – Develop the overall personality through value education
CO4 – Overcome the self destructive habits with value education
CO5 – Interpret social empowerment with value education

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							✓	✓				✓
CO2							✓	✓	✓			✓
CO3							✓	✓	✓			✓
CO4							✓	✓				✓
CO5							✓	✓				✓

REFERENCES:

1. Chakroborty , S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press ,New Delhi

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AD5093 **PEDAGOGY STUDIES** **L T P C**
3 0 0 0

OBJECTIVES:

- Understand the methodology of pedagogy.
- Compare pedagogical practices used by teachers in formal and informal classrooms in developing countries.
- Infer how can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.
- Illustrate the factors necessary for professional development.
- Identify the Research gaps in pedagogy.

UNIT I INTRODUCTION AND METHODOLOGY: 9

Aims and rationale, Policy background, Conceptual framework and terminology - Theories of learning, Curriculum, Teacher education - Conceptual framework, Research questions **-** Overview of methodology and Searching.

UNIT II THEMATIC OVERVIEW 9

Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries - Curriculum, Teacher education.

UNIT III EVIDENCE ON THE EFFECTIVENESS OF PEDAGOGICAL PRACTICES 9

Methodology for the in depth stage: quality assessment of included studies - How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? - Theory of change - Strength and nature of the body of evidence for effective pedagogical practices - Pedagogic theory and pedagogical approaches - Teachers' attitudes and beliefs and Pedagogic strategies.

UNIT IV PROFESSIONAL DEVELOPMENT 9

Professional development: alignment with classroom practices and follow up support - Peer support - Support from the head teacher and the community - Curriculum and assessment - Barriers to learning: limited resources and large class sizes

UNIT V RESEARCH GAPS AND FUTURE DIRECTIONS 9

Research design – Contexts – Pedagogy - Teacher education - Curriculum and assessment - Dissemination and research impact.

TOTAL: 45 PERIODS

OUTCOMES:

- Understand the methodology of pedagogy.
- Understand Pedagogical practices used by teachers in formal and informal classrooms in developing countries.
- Find how can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.
- Know the factors necessary for professional development.
- Identify the Research gaps in pedagogy.

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												✓
CO2												✓
CO3												✓
CO4												✓
CO5												✓

REFERENCES:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.
3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.
4. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
5. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.

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AD5094 **STRESS MANAGEMENT BY YOGA**

L T P C
3 0 0 0

OBJECTIVES:

- Develop healthy mind in a healthy body thus improving social health also improve efficiency
- Invent Do's and Don't's in life through Yam
- Categorize Do's and Don't's in life through Niyam
- Develop a healthy mind and body through Yog Asans
- Invent breathing techniques through Pranayam

UNIT I INTRODUCTION TO YOGA **9**

Definitions of Eight parts of yog.(Ashtanga)

UNIT II YAM **9**

Do`s and Don't's in life.
Shaucha, santosh, tapa, swadhyay, ishwarpranidhan

UNIT III NIYAM **9**

Do`s and Don't's in life.
Ahinsa, satya, astheya, bramhacharya and aparigraha

UNIT IV ASAN **9**

Various yog poses and their benefits for mind & body

UNIT V PRANAYAM **9**

Regularization of breathing techniques and its effects-Types of pranayam

TOTAL: 45 PERIODS

OUTCOMES:

CO1 – Develop healthy mind in a healthy body thus improving social health also improve efficiency
CO2 – Learn Do's and Don't's in life through Yam
CO3 – Learn Do's and Don't's in life through Niyam
CO4 – Develop a healthy mind and body through Yog Asans
CO5 – Learn breathing techniques through Pranayam

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							✓	✓				✓
CO2							✓	✓				✓
CO3							✓	✓				✓
CO4							✓	✓				✓
CO5							✓	✓				✓

REFERENCES:

1. "Rajayoga or conquering the Internal Nature" by Swami Vivekananda, Advaita Ashrama (Publication Department), Kolkata
2. 'Yogic Asanas for Group Tarining-Part-I" : Janardan Swami Yogabhyasi Mandal, Nagpur

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AD5095 PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS L T P C
3 0 0 0

OBJECTIVES:

- Develop basic personality skills holistically
- Develop deep personality skills holistically to achieve happy goals
- Rewrite the responsibilities
- Reframe a person with stable mind, pleasing personality and determination
- Discover wisdom in students

UNIT I NEETISATAKAM-HOLISTIC DEVELOPMENT OF PERSONALITY - I 9

Verses- 19,20,21,22 (wisdom) - Verses- 29,31,32 (pride & heroism) – Verses- 26,28,63,65 (virtue)

UNIT II NEETISATAKAM-HOLISTIC DEVELOPMENT OF PERSONALITY - II 9

Verses- 52,53,59 (dont's) - Verses- 71,73,75,78 (do's)

UNIT III APPROACH TO DAY TO DAY WORK AND DUTIES 9

Shrimad Bhagwad Geeta: Chapter 2-Verses 41, 47,48 - Chapter 3-Verses 13, 21, 27, 35 Chapter 6-Verses 5,13,17,23, 35 - Chapter 18-Verses 45, 46, 48

UNIT IV STATEMENTS OF BASIC KNOWLEDGE – I 9

Statements of basic knowledge - Shrimad Bhagwad Geeta: Chapter2-Verses 56, 62, 68 Chapter 12 - Verses 13, 14, 15, 16,17, 18

UNIT V PERSONALITY OF ROLE MODEL - SHRIMAD BHAGWADGEETA 9

Chapter2-Verses 17, Chapter 3-Verses 36,37,42 - Chapter 4-Verses 18, 38,39 Chapter18 – Verses 37,38,63

TOTAL: 45PERIODS

OUTCOMES:

CO1: To develop basic personality skills holistically
CO2: To develop deep personality skills holistically to achieve happy goals
CO3: To rewrite the responsibilities
CO4: To reframe a person with stable mind, pleasing personality and determination
CO5: To awaken wisdom in students

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1									✓			✓
CO2									✓			✓
CO3									✓			✓
CO4									✓			✓
CO5									✓			✓

REFERENCES:

1. Gopinath,Rashtriya Sanskrit Sansthanam P, Bhartrihari's ThreeSatakam , Niti-sringar-vairagya, New Delhi,2010

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2. Swami Swarupananda , Srimad Bhagavad Gita, Advaita Ashram,Publication Department, Kolkata,2016

AD5097 ESSENCE OF INDIAN KNOWLEDGE TRADITION L T P C
3 0 0 0

COURSE OBJECTIVES

The course will introduce the students to

- get a knowledge about Indian Culture
- Know Indian Languages and Literature religion and philosophy and the fine arts in India
- Explore the Science and Scientists of Ancient, Medieval and Modern India
- Understand education systems in India

UNIT I INTRODUCTION TO CULTURE 9

Culture, civilization, culture and heritage, general characteristics of culture, importance of culture in human literature, Indian Culture, Ancient India, Medieval India, Modern India.

UNIT II INDIAN LANGUAGES AND LITERATURE 9

Indian Languages and Literature – I: Languages and Literature of South India, – Indian Languages and Literature – II: Northern Indian Languages & Literature

UNIT III RELIGION AND PHILOSOPHY 9

Major religions practiced in India and Understanding their Philosophy – religious movements in Modern India (Selected movements only)

UNIT IV FINE ARTS IN INDIA (ART, TECHNOLOGY& ENGINEERING) 9

Indian Painting, Indian handicrafts, Music, divisions of Indian classic music, modern Indian music, Dance and Drama, Indian Architecture (ancient, medieval and modern), Science and Technology in India, development of science in ancient, medieval and modern India

UNIT V EDUCATION SYSTEM IN INDIA 9

Education in ancient, medieval and modern India, aims of education, subjects, languages, Science and Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India

TOTAL: 45PERIODS

COURSE OUTCOMES

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

- Understand philosophy of Indian culture.
- Distinguish the Indian languages and literature.
- Learn the philosophy of ancient, medieval and modern India.
- Acquire the information about the fine arts in India.
- Know the contribution of scientists of different eras.
- Understand education systems in India

REFERENCES:

1. Kapil Kapoor, “Text and Interpretation: The India Tradition”,ISBN: 81246033375, 2005
2. “Science in Samskrit”, Samskrita Bharti Publisher, ISBN 13: 978-8187276333, 2007
3. NCERT, “Position paper on Arts, Music, Dance and Theatre”, ISBN 81-7450 494-X, 200

4. Narain, “Examinations in ancient India”, Arya Book Depot, 1993
5. Satya Prakash, “Founders of Sciences in Ancient India”, Vijay Kumar Publisher, 1989
6. M. Hiriyanna, “Essentials of Indian Philosophy”, Motilal Banarsidass Publishers, ISBN 13: 978-8120810990, 2014

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AD5098 SANGA TAMIL LITERATURE APPRECIATION L T P C
3 0 0 0

Course Objectives: The main learning objective of this course is to make the students an appreciation for:

1. Introduction to Sanga Tamil Literature.
2. 'Agathinai' and'Purathinai' in SangaTamil Literature.
3. 'Attruppadai'in SangaTamil Literature.
4. 'Puranaanuru'in SangaTamil Literature.
5. 'Pathitrupaththu'in SangaTamil Literature.

UNIT I SANGA TAMIL LITERATUREANINTRODUCTION 9

Introduction to Tamil Sangam–History of Tamil Three Sangams–Introduction to Tamil Sangam Literature–Special Branches in Tamil Sangam Literature- Tamil Sangam Literature's Grammar- Tamil Sangam Literature's parables.

UNIT II 'AGATHINAI'AND'PURATHINAI' 9

Tholkappiyar's Meaningful Verses–Three literature materials–Agathinai's message- History of Culturefrom Agathinai– Purathinai–Classification–Mesaage to Society from Purathinai.

UNIT III 'ATTRUPPADAI'. 9

AttruppadaiLiterature–Attruppadaiin'Puranaanuru'-Attruppadaiin'Pathitrupaththu'-Attruppadai in 'Paththupaattu'.

UNIT IV 'PURANAANURU' 9

Puranaanuru onGood Administration,Rulerand Subjects–Emotion&itsEffectin Puranaanuru.

UNIT V 'PATHITRUPATHTHU' 9

Pathitrupaththuin'Ettuthogai'–Pathitrupaththu'sParables–Tamildynasty:Valor,Administration, Charity in Pathitrupaththu- Mesaage to Society from Pathitrupaththu.

Total (L:45) = 45 PERIODS

COURSE OUTCOMES: Upon completionofthiscourse, the studentswillbeable to:

1. Appreciate and apply the messages in Sanga Tamil Literature in their life.
2. Differentiate'Agathinai' and'Purathinai'in their personal andsocietallife.
3. Appreciate and apply the messages in' Attruppadai'in their personal and societalife.
4. Appreciate and apply the messages in' Puranaanuru'in their personal and societallife.
5. Appreciate and apply the messages in' Pathitrupaththu'in their personal and societallife.

REFERENCES:

1. Sivaraja Pillai, The Chronology oftheEarlyTamils,SagwanPress,2018.
2. HankHeifetz andGeorgeL. Hart, The Purananuru,Penguin Books,2002.
3. Kamil Zvelebil,TheSmile of Murugan: OnTamil Literature of South India, Brill Academic Pub,1997.
4. GeorgeL. Hart, Poetsof theTamil Anthologies: AncientPoemsofLove andWar, Princeton University Press,2015.
5. XavierS.Thani Nayagam, Landscape and poetry:astudy of nature in classical Tamil poetry,Asia Pub.House, 1967.

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1									0.9						0.6
2									0.9						0.6
3									0.9						0.6
4									0.9						0.6
5									0.9						0.6

HSMC– ELECTIVES – HUMANITIES I (ODD SEMESTER)

HU5171 LANGUAGE AND COMMUNICATION LT P C
3 0 0 3

COURSE DESCRIPTION

This course offers an introduction to language and communication. The primary goal of this course is to familiarize students with key ideas related to communication using language as well as non verbal means. Ideas related to the use of language and the underlying power structures are also examined. The course also examines the role of media in communication and in the dissemination of ideas as well as opinions.

Objectives

- ✓ To familiarize students with the concept of communication using linguistic and non linguistic resources.
- ✓ To help students ask critical questions regarding facts and opinions.
- ✓ To provide students with the material to discuss issues such as language and power structures.
- ✓ To help students think critically about false propaganda and fake news.

Learning Outcomes

- ➢ Students will be able to use linguistic and non linguistic resources of language in an integrated manner for communication.
- ➢ Students will be able to analyse communication in terms of facts and opinions.
- ➢ Students will be able to discuss, analyse and argue about issues related to language and power.

UNIT I LINGUISTIC AND NON-LINGUISTIC RESOURCE OF COMMUNICATION: 9

a) Writing and Speech
b) Distinction between language structure and language use, form and function, acceptability and grammaticality
c) Gestures and Body language, pictures and symbols, cultural appropriacy
d) Communicative Competency, context and situation, combination of linguistic and non-linguistic elements of communication

UNIT II STRUCTURE OF WRITING/CONVERSATION: 9

a) Language skills and the communication cycle; speaking and listening, writing and reading
b) Initiating and closing conversations, intervention, turn taking
c) Writing for target reader, rhetorical devices and strategies
d) Coherence and Cohesion in speech and writing

UNIT III POWER STRUCTURE AND LANGUAGE USE: 9

a) Gender and language use
b) Politeness expressions and their use
c) Ethical dimensions of language use
d) Language rights as part of human rights

UNIT IV MEDIA COMMUNICATION: 9

a) Print media, electronic media, social media
b) Power of media
c) Manufacturing of opinion, fake news and hidden agendas

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UNIT V PERSUASIVE COMMUNICATION AND MISCOMMUNICATION: 9

a) Fundamentals of persuasive communication
b) Persuasive strategies
c) Communication barriers

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Austin, 1962, J.L. How to do things with words. Oxford: Clarendon Press. Grice, P.1989. Studies in the way of words. Cambridge, M.A: Harvard University Press.
2. Chomsky, N.1966. Aspects of the theory of syntax, The MIT press, Cambridge. Chomsky, N.2006. Language and Mind, Cambridge University Press.
3. Hymes. D.N. 1972, On communication competence in J.B. Pride and J.Holmes (ed), Sociolinguistics, pp 269-293, London Penguin.
4. Gilbert, H.Harman, 1976. Psychological aspect of the theory of syntax in Journal of Philosophy, page 75-87.
5. Stephen. C. Levenson, 1983, Pragmatics, Cambridge University press.
6. Stangley, J. 2007. Language in Context. Clarendon press, Oxford. 7. Shannon, 1942. A Mathematical Theory of Communication. 8. Searle, J.R. 1969. Speech acts: An essay in the philosophy of language. Cambridge: Cambridge University Press.

HU5172 VALUES AND ETHICS L T P C
3 0 0 3

OBJECTIVES:

- Teach definition and classification of values.
- Explain Purusartha.
- Describe Sarvodaya idea.
- Summarize sustenance of life.
- Conclude views of hierarchy of values.

UNIT I DEFINITION AND CLASSIFICATION OF VALUES 9

Extrinsic values- Universal and Situational values- Physical- Environmental-Sensuous- Economic-Social-Aesthetic-Moral and Religious values

UNIT II CONCEPTS RELATED TO VALUES 9

Purusartha-Virtue- Right- duty- justice- Equality- Love and Good

UNIT III IDEOLOGY OF SARVODAYA 9

Egoism- Altruism and universalism- The Ideal of Sarvodaya and Vasudhaiva Kutumbakam

UNIT IV SUSTENANCE OF LIFE 9

The Problem of Sustenance of value in the process of Social, Political and Technological Changes

UNIT V VIEWS ON HIERARCHY OF VALUES 9

The Problem of hierarchy of values and their choice, The views of Pt. Madan Mohan Malviya and Mahatma Gandhi

TOTAL: 45 PERIODS

OUTCOMES:

CO1: Able to understand definition and classification of values.
CO2: Able to understand purusartha.
CO3: Able to understand sarvodaya idea.
CO4: Able to understand sustenance of life.
CO5: Able to understand views of hierarchy of values.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1								✓	✓			✓
CO2								✓	✓			✓
CO3								✓	✓			✓
CO4								✓	✓			✓
CO5								✓	✓			✓

TEXTBOOKS:

1. AwadeshPradhan :MahamanakeVichara. (B.H.U., Vanarasi-2007)
2. Little, William, : An Introduction of Ethics (Allied Publisher, Indian Reprint 1955)
3. William, K Frankena : Ethics (Prentice Hall of India, 1988)

HU5173 HUMAN RELATIONS AT WORK L T P C
3 0 0 3

OBJECTIVES:

- Illustrate human relations at work its relationship with self.
- Explain the importance of interacting with people at work to develop teamwork.
- Infer the importance of physical health in maintaining human relations at work.
- Describe the importance of staying psychologically healthy.
- Identify the essential qualities for progressing in career.

UNIT I UNDERSTANDING AND MANAGING YOURSELF 9

Human Relations and You: Self-Esteem and Self-Confidence: Self-Motivation and Goal Setting; Emotional Intelligence, Attitudes, and Happiness; Values and Ethics and Problem Solving and Creativity.

UNIT II DEALING EFFECTIVELY WITH PEOPLE 9

Communication in the Workplace; Specialized Tactics for Getting Along with Others in the Workplace; Managing Conflict; Becoming an Effective Leader; Motivating Others and Developing Teamwork; Diversity and Cross-Cultural Competence.

UNIT III STAYING PHYSICALLY HEALTHY 9

Yoga, Pranayam and Exercise: Aerobic and anaerobic.

UNIT IV STAYING PSYCHOLOGICALLY HEALTHY 9

Managing Stress and Personal Problems, Meditation.

UNIT V DEVELOPING CAREER THRUST 9

Getting Ahead in Your Career, Learning Strategies, Perception, Life Span Changes, and Developing Good Work Habits.

TOTAL: 45 PERIODS

OUTCOMES:

Students will be able to
CO1: Understand the importance of self-management.
CO2: Know how to deal with people to develop teamwork.
CO3: Know the importance of staying healthy.
CO4: Know how to manage stress and personal problems.
CO5: Develop the personal qualities essential for career growth.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						✓		✓	✓			✓
CO2									✓	✓		✓
CO3						✓		✓	✓			✓
CO4								✓				✓
CO5								✓	✓	✓		✓

TEXT BOOK:

1. Dubrien, A. J. (2017). Human Relations for Career and Personal Success: Concepts, Applications, and Skills, 11th Ed. Upper Saddle River, NJ: Pearson.

REFERENCES:

1. Greenberg, J. S. (2017). Comprehensive stress management (14th edition), New York: McGraw Hill.
2. Udai, Y. (2015). Yogasanaurpranayam. New Delhi: N.S. Publications.

HU5174 PSYCHOLOGICAL PROCESSES L T P C
3 0 0 3

COURSE DESCRIPTION

Psychological Processes course is designed for students to be aware of the basic principles of psychology for the better understanding of people's psyche and behaviour around them. This course enables learners to use the optimal use of different forms of thinking skills and thereby results in effective communication in diverse situations. Every unit of the syllabus highlights the psychological process of people, the most powerful and constructive use of perceptions.

OBJECTIVES

The major objectives of this course is

- To develop students' awareness – on psychology, learning behavior and usage of perception effectively.
- To learn to use the various kinds of thinking in a formal context.
- To critically evaluate content and comprehend the message on the bases of perception, personality and intelligence.

UNIT 1: INTRODUCTION

What is psychology? - Why study psychology? - Psychology as science – Behavior and its role in human communication – socio-cultural bases of behaviour – Biological bases of behavior - Brain and its functions – Principles of Heredity – Cognition and its functions Fields of psychology – Cognitve and Perceptual – Industrial and Organizational.

UNIT 2: SENSORY & PERCEPTUAL PROCESSES

Some general properties of Senses: Visual system – the eye, colour vision – Auditory system – Hearing, listening, Sounds - Other senses - Selective attention; physiological correlates of attention; Internal influences on perception learning – set - motivation & emotion - cognitive styles; External influences on perception figure and ground separation – movement – organization – illusion; Internal- external interactions: Constancy - Depth Perception- Binocular & Monocular Perception; Perceptual defense & Perceptual vigilance; Sensory deprivation -Sensory bombardment; ESP - Social Perception.

UNIT 3: COGNITION & AFFECT

Learning and memory – philosophy of mind – concepts - words – images – semantic features – Association of words – Repetition – Retrieval – Chunking - Schemata - Emotion and motivation – nature and types of motivation – Biological & Psychosocial motivation – nature and types of emotions – physiological & cognitive bases of emotions – expressions of emotions – managing negative emotions - enhancing positive emotions.

UNIT 4: THINKING, PROBLEM-SOLVING & DECISION MAKING

Thinking skills – Types of thinking skills – Concrete & Abstract thinking – Convergent & Divergent - Analytical & Creative thinking – Problem & Possibility thinking – Vertical & Lateral thinking – Problem solving skills – stages

of problem solving skills – Decision making - intuition and reasoning skills - Thinking and language - The thinking process- concepts, problem solving, decision-making, creative thinking; language communication.

UNIT 5: PERSONALITY & INTELLIGENCE

Psychological phenomena & Attributes of humans - cognition, motivation, and behavior - thoughts, feelings, perceptions, and actions – personality dimensions, traits, patterns - Specialized knowledge, performance accomplishments, automaticity or ease of functioning, skilled performance under challenge - generative flexibility, and speed of learning or behavior change.

References

1. Morgan, C.T.and King, R.A (1994) Introduction to Psychology, Tata McGraw Hill Co Ltd, New Delhi.
2. Robert A. Baron (2002), Psychology, 5th Edition, Prentice Hall, India.
3. Michael W.Passer, Ronald E.smith (2007), Psychology: The science of mind and Behavior,3rd Edition Tata McGraw-Hill Edition.
4. Robert S.Feldman (2004) Understanding Psychology 6th Edition Tata McGraw – Hill.
5. Endler, N. S., & Summerfeldt, L. J. (1995). Intelligence.personality. psychopathology. and adjustment. In D. H. Saklofske & M. Zeidner (Eds.). International handbook of personality and intelligence (pp. 249-284). New York: Plenum Press.
6. Ford, M. E. (1994). A living systems approach to the integration of personality and intelligence.In R. J. Sternberg.& P. Ruzgis (Eds.). Personality and intelligence (pp. 188-21 7). New York: Cambridge University Press.

- De Bono, E (1990) Lateral Thinking, Harper Perennial, New York.

HU5175 EDUCATION, TECHNOLOGY AND SOCIETY

L	T	P	C
3	0	0	3

COURSE DESCRIPTION

This course introduces students to multidisciplinary studies in Education, Technology and Society. Students will get an understanding of the relationship between education, technology and society. They will also learn about the long lasting impact of good education in a technologically advanced society.

COURSE OBJECTIVES:

The course aims

- To help learners understand the basics of different types of technology utilised in the field of education
- To make them realize the impact of education in society
- To make them evolve as responsible citizen in a technologically advanced society

LEARNING OUTCOMES

By the end of the course, learners will be able to

- Understand the various apps of technology apps and use them to access, generate and present information effectively.
- Apply technology based resources and other media formats equitably, ethically and legally.
- Integrate their technical education for betterment of society as well as their personal life.

UNIT I INDIAN EDUCATION SYSTEM

Gurukul to ICT education – Teacher as facilitator – Macaulay's Minutes – English medium vs Regional medium – Importance of Education in Modern India - Challenges in Education

UNIT II LEARNING THEORIES

Learning Theories – Behaviorism – Cognitivism – Social Constuctivism – Humanism Learning Styles – Multiple Intelligences – Emotional Intelligence – Blooms Taxonomy

UNIT III TECHNOLOGICAL ADVANCEMENTS

Web tools – Social media in education – elearning – MOOCs – Mobile assisted learning – Learning Apps – Blended learning - Self-directed learning

UNIT IV EDUCATIONAL TECHNOLOGY

Technological implications on Education – Teaching, Learning & Testing with Technology - Advantages and drawbacks – Critical analysis on the use of technology

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UNIT V ETHICAL IMPLICATIONS

Plagiarism – Online Copyright issues – Ethical and value implications of education and technology on individual and society.

TOTAL:45 PERIODS

TEACHING METHODS

Teaching modes include guest lectures, discussion groups, presentations, visual media, and a practicum style of learning.

EVALUATION

As this is course is not a content based course, it focuses more on the ethical use of technology in education and society, and so, evaluation can be based on assignments and discussions. So there is no need for an end semester examination. Internals marks can be taken for the total marks.

INTERNAL (100 % WEIGHTAGE)

(a) Written Test (40 marks)
(b) Assignment: Write a real time report of the technology use in any school / college (15 marks)
(c) Presentation: Students choose any one of the technological tools and present its relevance to education and society (15 marks)
(d) Group discussion: Students discuss in groups on case studies relating to various challenges in education and technology use in society (20 marks)
(e) Blog entry: Making weekly blog posts in Class Blog on the topics related to the course posted by the instructor and commenting on others' posts. (10 marks)

REFERENCES

1) Education and Social order by Bertrand Russel
2) Theories of learning by Bower and Hilgard
3) Technology and Society by Jan L Harrington

HU5176 PHILOSOPHY L T P C
3 0 0 3

OBJECTIVES

- To create a new understanding by teaching philosophy through a comparison of Indian and Western traditions.
- To Fosters critical thinking and imagination by dealing with inter-related concepts in literature and science.
- To bridge the gap between the sciences and humanities through introspective analyses.
- To nurture an understanding of the self and elucidates ways to progress towards a higher understanding of one's self and others.

UNIT I KNOWLEDGE 9

Knowledge (Vidya) Versus Ignorance (Avidya)- Brihadaranyaka Upanishad. Unity and Multiplicity – Isha Upanishad. What is True Knowledge? Ways to True Knowledge. Introduction to Philosophy of Yoga, Socratic Debate, Plato's Views.Asking and Answering Questions to Stimulate Critical Thinking and to Draw Ideas.Argumentative Dialogues.Dialectical Methods to Arrive at Conclusions.

UNIT II ORIGIN 9

Origin of Universe And Creation – 'Nasidiya Sukta' in Relation With Big Bang Theory. Greek Concept of Chaos.The Concept of Space – Space as the Final Goal – Udgitha. Relationship Between Teacher And Student – The Knowledge Of Combinations, Body And Speech – Siksha Valli – Taittriya Upanishad.

UNIT III WORD **9**

Aum- Speech and Breath as Pair – Chandogya Upanishad and Brihadaryanaka Upanishad.Significance of Chants, Structure of Language and Cosmic Correspondences.The Non-Dual Word – Bhartrihari's Vakyapadiyam. Sphota-Ultimate Reality Expressed Through Language. Intention.Thought 'Sabdanaor' and Speaking.

UNIT IV KNOWLEDGE AS POWER/OPPRESSION **9**

Power- as Self-Realization in Gita.Krishna's Advice to Arjuna on How to Conquer Mind. Francis Bacon – Four Idols – What Prevents One From Gaining Knowledge? Michel Foucault- Knowledge as Oppression.Panopticon.Rtam (Truth) and Satyam (Eternal Truth).

UNIT V SELF KNOWLEDGE/BRAHMAN **9**

Knowledge about Self, Transcendental Self.The Different Chakras and the Stages of Sublimation.Philosophy of Yoga and Siva for Union of Mind and Body.Concept of Yin/Yang.Aspects of the Feminine / Masculine.

TOTAL : 45 PERIODS

OUTCOMES:

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

1. Think sceptically, ask questions and to arrive at deductions.
2. Connect and relate different branches of thought.
3. Comprehends the relation between language, thought and action.
4. Arrive at a better understanding of self and others and forms a new outlook.

REFERENCES:

1. Swami Nikhilananda: The Upanishads, Swami Nikhilananda, Advaita Ashrama, Kolkata.
2. Swamy Tapasyananda: Srimad Bhagavad Gita, The Scripture of Mankind, Sri Ramakrishna Math, Chennai.
3. Subrahmanyam, Korada: Vakyapadiyam of Bhartrhari Brahmakanda, Sri Garib Dass series.
4. Swami Lokeswarananda: Chandogya Upanishad, Swami Lokeswarananda, Ramakrishna Mission Institute of Culture, Kolkata.
5. Brahma, Apuruseya: The Four Vedas: Translated in English.
6. Haich, Elizabeth: Sexual Energy and Yoga.
7. Bacon, Francis: Power as Knowledge
8. Vlastos, Gregory: Socrates Ironist and Moral Philosopher.
9. Plato: The Republic, Penguin.
10. Gutting, Garry: Foucault A Very Short Introduction, Oxford.

HU5177 APPLICATIONS OF PSYCHOLOGY IN EVERYDAY LIFE **L T P C**

3 0 0 3

UNITI INTRODUCTION **7**

Natureandfields.

UNITII PSYCHOLOGYININDUSTRIESAND ORGANIZATIONS **9**

Job analysis; fatigue and accidents; consumer behavior.

UNITIII PSYCHOLOGY AND MENTALHEALTH **11**

Abnormality, symptoms and causes psychological disorders

UNITIV PSYCHOLOGY AND COUNSELING **7**

Need of Counseling, Counselor and the Counselee, Counseling Process, Areas of Counseling.

UNITV PSYCHOLOGY AND SOCIALBEHAVIOUR **11**

Group, group dynamics, team building, Prejudice and stereotypes; Effective Communication, conflict and negotiation.

TOTAL:45PERIODS

TEXTBOOKS

1. Schultz,D.&Schultz,S.E.(2009). Psychology and WorkToday(10thed.). New Jersey:Pearson/PrenticeHall
2. Butcher,J.N., Mineka,S.,&Hooley,J. M.(2010). Abnormal psychology(14th ed.).NewYork: Pearson
3. Gladding,S.T. (2014).Counselling:Acomprehensiveprofession. NewDelhi: PearsonEducation
4. Aronson, E.,Wilson, T. D.,&Akert, R. M.(2010).Social Psychology(7th Ed.). UpperSaddleRiver,NJ: PrenticeHall

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HSMC– ELECTIVES – HUMANITIES II (EVEN SEMESTER)

HU5271 GENDER, CULTURE AND DEVELOPMENT L T P C
3 0 0 3

COURSE DESCRIPTION

This course offers an introduction to Gender Studies that asks critical questions about the meanings of sex and gender in Indian society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary drawing from Indian literature and media studies, to examine cultural assumptions about sex, gender, and sexuality. This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with class, caste and other social identities. This course also seeks to build an understanding of the concepts of gender, gender-based violence, sexuality, and rights and their impact on development through a number of discussions, exercises and reflective activities.

Objectives

- ✓ To familiarize students with the concepts of sex and gender through literary and media texts.
- ✓ To help students ask critical questions regarding gender roles in society.
- ✓ To provide students with the material to discuss gender issues such as gender based discrimination, violence and development.
- ✓ To help students think critically about gender based problems and solutions.

Learning Outcomes

- ➢ Students will be able to critically read literary and media texts and understand the underlying gender perspectives in them.
- ➢ Students will be able to analyse current social events in the light of gender perspectives.
- ➢ Students will be able to discuss, analyse and argue about issues related to gender and their impact on society, culture and development.

UNIT I: Introduction to Gender

- Definition of Gender
- Basic Gender Concepts and Terminology
- Exploring Attitudes towards Gender
- Social Construction of Gender

Texts:

1. Sukhu and Dukhu (Amar Chitra Katha)
2. The Cat who Became a Queen (Folk tale, J. Hinton Knowles, Folk-Tales of Kashmir. London: Kegan Paul, Trench, Trübner, and Company, 1893, pp. 8-10.)

UNIT II: Gender Roles and Relations

- Types of Gender Roles
- Gender Roles and Relationships Matrix
- Gender-based Division and Valuation of Labour

Texts:

1. Muniyakka (Short Story, Lakshmi Kannan, Nandanvan and Other Stories, Hyderabad: Orient Blackswan, 2011)
2. Video: Witness: Freeing Women From Cleaning Human Waste (2014, HRW, Manual Scavenging, India)

UNIT III: Gender Development Issues

- Identifying Gender Issues
- Gender Sensitive Language
- Gender, Governance and Sustainable Development
- Gender and Human Rights
- Gender and Mainstreaming

Texts:

1. The Many Faces of Gender Inequality (Essay, Amartya Sen, Frontline, Volume 18 - Issue 22, Oct. 27 - Nov. 09, 2001)
2. Tell Us Marx (Poem, Mallika Sengupta, Translated by Sanjukta Dasgupta)

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UNIT IV: Gender-based Violence

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- The concept of violence
- Types of Gender-based violence
- The relationship between gender, development and violence
- Gender-based violence from a human rights perspective

Texts:
1. Lights Out (Play, Manjula Padmanabhan)
2. Lights Out (Video of play enacted)

UNIT V: Gender and Culture

- Gender and Film
- Gender, Media and Advertisement

Texts:
1. Mahanagar (Movie: Satyajit Ray)
2. Beti Bachao Beti Padhao Advertisements

READINGS: Relevant additional texts for readings will be announced in the class. Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments.

ASSESSMENT AND GRADING:
Discussion & Classroom Participation: 20%
Project/Assignment: 30%
End Term Exam: 50%

HU5272 ETHICS AND HOLISTIC LIFE L T P C
3 0 0 3

OBJECTIVES:

- To emphasize the meaning and nature of ethics, human values and holistic life for leading a good, successful and happy life through continuous examination of thoughts and conduct in day to day life.
- To understand the status and responsible role of individual in abatement of value crisis in contemporary world in order to develop a civilized and human society. Understanding the process of ethical decision making through critical assessment of incidents/cases of ethical dilemmas in personal, professional and social life.
- To view the place of Ethics and Human Values in the development of individual and society through identification and cross examination of life values and world view of his/her role models in society.

UNIT I HUMAN LIFE, ITS AIM AND SIGNIFICANCE

The concept of a successful life, happy life and a meaningful life, Ethical and decision making capability and its development: Meaning of Ethical dilemma, sharing real life experiences.

UNIT II CREATIVE AND LEADERSHIP ABILITY AND THEIR DEVELOPMENT

Intellectual, Emotional, Creative, Ethico- spiritual development, Aesthetic sense, Self-dependency, Activeness, Development of positive attitude.

UNIT III HARMONY IN PERSONAL AND SOCIAL LIFE:

Concept of personal and group Ethics; Balance between - rights and duties-welfare of self and welfare of all, Creating a value based work culture in hostel, classroom and other places in the campus and society.

UNIT IV CHARACTER, RIGHTEOUSNESS AND VIRTUES FOR A MEANINGFUL LIFE

Egolessness, Humility, Righteousness, Purity, Truthfulness, Integrity, Self-restraint, Self-control, Sense of responsibility, Empathy, Love, Compassion, Maitri / Comradeship, Cooperation, Tolerance.

UNIT V DILEMMA BETWEEN MATERIALISTIC DEVELOPMENT AND HUMAN WELFARE

Science, Technology, Consumerism, Relation with Nature and Environment, New dimension of Global Harmony: Democracy, Equality, Social Justice

TOTAL:45 PERIODS

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OUTCOMES:

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

1. Enable students to understand the concept of contemporary ethics at different levels: Individual, local and Global and enable them to cross examine the ethical and social consequences of the decisions of their life-view and world view.
2. Develop the ability of students to create a balance between their individual freedom and social responsibilities and enable them to identify the personal, professional and social values and integrate them in their personality after cross examination.
3. Enable students to cross examine their earlier decisions taken in life and understand the meaning of ethical dilemma to overcome the ethical dilemmas and engage in critical reflection.
4. Develop positive habits of thought and conduct and work cohesively with fellow beings who have variety of strengths, experiences, shortcomings and challenges, hence to enable them to handle diverse type of personalities.
5. Enable students to develop a method for making ethically sound decisions for themselves, within hostels, classrooms, university campus and society.

HU5273 LAW AND ENGINEERING LT P C
3 0 0 3

UNIT I THE LEGAL SYSTEM: SOURCES OF LAW AND THE COURT STRUCTURE 9

Enacted law -Acts of Parliament are of primary legislation, Common Law or Case law- Principles taken from decisions of judges constitute binding legal rules. The Court System in India and Foreign Courtiers. (District Court, District Consumer Forum, Tribunals, High Courts, Supreme Court) Arbitration: As an alternative to resolving disputes in the normal courts, parties who are in dispute can agree that this will instead be referred to arbitration.

UNIT II LAWS 9

Basic principles of contract law, sale of goods law, laws relating to industrial pollution, accident, environmental protection, health and safety at work, patent law, constitutional law: the supreme law of the land, Information technology law and cyber crimes.

UNIT III BUSINESS ORGANISATIONS 9

Sole traders (Business has no separate identity from you, all business property belongs to you).

Partnerships: Types of Partnerships - Limited Liability Partnership, General Partnership, Limited Partnerships. Companies: The nature of companies, Classification of companies, Formation of companies, Features of a public company, Carrying on business, Directors– Their Powers and Responsibilities/Liabilities.

UNIT IV LAW AND SOCIETY 9

Interdisciplinary nature of law, legal ideologies/philosophy/ schools of jurisprudence**.**

UNIT V CASE STUDIES 9

Important legal disputes and judicial litigations

TOTAL: 45 PERIODS

HU5274 **FILM APPRECIATION** **L T P C**
3 0 0 3

COURSE DESCRIPTION

This is an intensive course designed to promote comprehensive understanding and insights into the nature of cinema and other related forms and practices. Movies, though at times are used more as escapism, they are also a true art form and expressive tool used by writers, directors and actors. This course will explore the aesthetics of cinema, the concepts behind storytelling and various other elements of a film. It will also explore the impact of movies in our society and in our lives. It also encourages students to use films as a medium to analyse visual texts and read underlying messages.

OBJECTIVES:

- To help learners understand the various movie genres and its types.
- To understand various elements that contributes to film making.
- To make them realize the impact of film in society.
- To analyse the visual media and interpret the underlying messages.

UNIT I THE COMPONENTS OF FILMS **9**

Story, Screenplay & Script – Actors – Director – Crew Members – Mis En Scene – Structure of A Film – Narrative Elements – Linear & Non-Linear – Types of Movie Genres: Mysteries, Romantic Comedies, Horror Etc.

UNIT II EVOLUTION OF FILM **9**

History of Films – Early Cinema – Silent Movies – Talkies – Film Language, Form, Movement – Film Theories – Realist, Auteurists, Feminist, Psychonalyic, Idealogical Theories.

UNIT III FILMS ACROSS THE WORLD **9**

European Films – Russian Films – Japanese Films – Korean Films – Hollywood Film – Studio Culture – All Time Great Movies.

UNIT IV INDIAN FILMS **9**

The Early Era – History Of Indian Cinema – Movies for Social Change – Hindi Movies that Created Impact – Regional Movies – Documentaries – Cultural Identity.

UNIT V INTERPRETING FILMS **9**

Film Criticism & Appreciation – Censorship in Movies – Cultural Representation in Movies – Television – New Media & Online Media – Films Beyond Entertainment.

TOTAL: 45 PERIODS

OUTCOMES

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

- Recognize types of films, their impact on society and their roles in our lives.
- Have an understanding of the concepts of storytelling, Mise en Scene, and other elements of film making.
- Interpret the underlying messages in the movies.

Teaching Methods

- Each unit consists of reading materials, learning activities videos, websites. Students are expected to watch movies sometimes in class and at times at home and discuss in class.

Evaluation

- As this is course is critical appreciation course on films, there is no written end semester examination. The course is more on learning how to critically analyse a movie and appreciate its finer elements. Therefore evaluation can be based on assignments and discussions. Internals marks can be taken for the total marks.

Internal (100 % weightage)

- Assignment 1: Write a movie review with critical analysis (20 marks).
- Assignment2 : Write a script for a scene taken from a short story / novella (20 marks).
- Presentation: Students choose any one topic related to films and present it to the audience. (25 marks)

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- Group discussion : Students discuss in groups on the various aspects of movies and its impact on society. (25 marks)
- Blog entry: Making weekly blog posts in Class Blog on the topics related to the course posted by the instructor and commenting on others' posts. (10 marks)

REFERENCES

1. A Biographical Dictionary of Film by David Thomson, Secker & Warburg, 1975
2. Signs and Meaning in the Cinema by Peter Wollen, Secker & Warburg, 1969
3. The World Viewed by Stanley Cavell 1971
4. Film Style and Technology: History and Analysis by Barry Salt, Starword, 1983
5. The Encyclopedia of Indian Cinema Edited by Ashish Rajadhyaksha and Paul Willemen, BFI, 1994.

HU5275 FUNDAMENTALS OF LANGUAGE AND LINGUISTICS L T P C
3 0 0 3

OBJECTIVES

- To broadly introduce students to the formal and theoretical aspects of linguistics.
- To enable learners to understand the various practical applications of language and recent findings in the field of applied linguistics.

CONTENTS : -

UNIT I LANGUAGE AND LINGUISTICS: AN OVERVIEW 9

Language and Linguistics-Linguistic Knowledge-Knowledge of Sound Systems & Words – Creativity of Language – Relationship of form and meaning. Grammar – descriptive, prescriptive, universal-Human Language – Animal Language – Sign Language- Computers and Language.

UNIT II MORPHOLOGY - WORDS OF LANGUAGE 9

Content and function words – morphemes -free & bound –prefixes – suffixes – roots and stems –inflectional and derivational morphology-compound words and their formation – malapropisms – slips of the tongue.

UNIT III SYNTAX- THE SENTENCE PATTERNS OF LANGUAGE AND SEMANTICS-THE MEANING OF LANGUAGE 9

Syntax : Rules of Syntax- Sentence Structure-Structural Ambiguity-Syntactic Categories. Semantics: Lexical Semantics – Anomaly-Metaphors- Idioms- Synonyms – Antonyms – Homonyms -Pragmatics– Speech Acts

UNIT IV PHONETICS – THE SOUNDS OF LANGUAGE 9

Speech sounds- Introduction to branches of Phonetics- The Phonetic Alphabet – IPA – Consonants - Vowels – Diphthongs- Tone and Intonation.

UNIT V APPLIED LINGUISTICS - THE PRACTICAL APPLICATIONS OF LANGUAGE 9

Language learning and teaching (ELT)- lexicography-translation studies-computational linguistics-neurolinguistics (speech pathology and language disorders)- forensic linguistics – sociolinguistics.

TOTAL : 45 PERIODS

Teaching Methods :

Lectures, discussion.

Evaluation Internal and External :

Internal: 2 written tests + assignments, seminars, project (50+15+15+20).
External: A 3 hour written exam (50 marks)

REFERENCES :

1.Victoria Fromkin, Robert Rodman, Nina Hyams.2019.An Introduction to Language.USA.CENGAGE.11th edition
2. Cook. G,2003. Applied linguistics.UK: Oxford University Press.

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HU5276 UNDERSTANDING SOCIETY AND CULTURE THROUGH LITERATURE L T P C
3 0 0 3

OBJECTIVES

- To internalize the importance of language by understanding its role in the transformation of man.
- To look at language, literature and culture as locus of identity and change.
- To extract meaning from existing literatures and cultures.
- To identify meanings in modern life by reconnecting with lost cultures.

Unit 1 Introduction

Why study literature? Tracing the origin – pictures. Tokens as precursors of writing. Movement from three dimensions to two dimensions- Pictography. From visual to oral -Logography. Reading out literature to young children- Edmund J Farrell.

Unit 2. Reading Culture

Reading culture through language, signs and consumables- Roland Barthes. Culture through poems- Nissim Ezekiel's ' The night of the Scorpion' . 'Nothing's Changed'- Tatamkhulu Afrika- Apartheid. Ruskin Bond- 'Night train at Deoli'- How real life is different from movies.

Unit 3. Identifying Meaning

Searching and locating meaning through literature. Looking for order in a chaotic world. The Myth of Sisyphus (Albert Camus) and Adi Shankar's 'Jagat Mithya'- the world as an illusion. The Indian version as 'meaninglesss meaning'.

Unit 4. Post Modernism

'If on a winter's night a traveler'- Italo Calvino. The book about the reader- the experience of reading as reading. Metafiction. Selfie Culture. Visual Culture as purpose of modern life.

Unit 5. Returning to Pictures

Literature of the present- Emphasis on the visual world. Twitterature. SMS. Whatsapp language. Consumer culture. Change in fixed gender notions. Interactive sessions. Introspection.

Reading list

1. Bond, Ruskin: 'Night train at Deoli'
2. Ezekiel, Nissim: ' The Night of the Scorpion'
3. Afrika,Tatamkhulu: 'Nothing's Changed'
4. Barthes, Roland: *Mythologies*
5. Shankaracharya: *Viveka Chudamani*
6. Camus, Albert- *The Myth of Sisyphus*
7. Calvino, Italo: *If on a winter's night a traveler*
8. Farrell, Edmund J: 'Listen, my children, and you shall read'

Outcome

- Can identify the connections among language, literature and culture.
- Is able to relate between seemingly different aspects of life.
- Understands the fractions in modern life and can assimilate meanings.