UNIVERSITY OF MAMAGEMENT AND TECHNOLOGY

SCHOOL OF TEXTILE AND DESIGN
MS Textiles

Course Specifications

TX-609
Apparel Manufacturing

Spring…..

http://www.umt.edu.pk/

COURSE SPECIFICATIONS

Basic Information			
Course Title**:**	Apparel Manufacturing		
Course Code**:**	TX-609		
Course credits/week**:**	Theory: 03	Lab: 00	Total: 03
Pre-requisite(s)**:**	None		
Co-requisite(s)**:**	None		
Program(s) on which the course is given**:**	MS Textiles		
Is the course major or minor element of the program?	Major: ☐	Minor: ☐	
School offering the program**:**	School of Textile and Design		
Department offering the course**:**	Department of Textile Engineering		
Academic year/level**:**	1/2		
Revision #**:**	01		
Last revised on (date):	N/A		

Overall Aims of the Course
This course is designed to provide a broad conceptual and somewhat theoretical perspective of apparel manufacturing that will serve as foundation for future apparel professionals. The goal is to assist textile and apparel students to better understand garment manufacturing and the complex decision making involved in producing apparel to meet the needs of the target customer. The intent is to provide a global and integrated perspective that will provide students with a comprehensive understanding of the industry and to be well-prepared apparel professionals. The content focuses on the factors that determine the cost, price, quality, performance and value of the garments.

Key Skills and Attributes to be Developed by the Course	
Apparel Knowledge	An ability to apply basic knowledge of arts and science to produce conventional and new apparel products
Problem Analysis	An ability to identify and formulate research literature and analyze problems using basic principles od mathematics and natural sciences
Communication	An ability to communicate effectively, orally and in writing, with textile community and society
Lifelong Learning	An ability to recognize importance of lifelong learning and pursue it in the broader context of innovation and technological development.

Course Schedule

Week	Module	Intended Learning Outcomes
1	Introduction to Apparel Manufacturing	At the end of this week, the students will be able to: • Nature of apparels

		• Structure of the apparel industry • Globalization of apparel manufacturing • Organization of apparel firms according to areas of specialization
2	Product Standards and Specifications	At the end of this week, the students will be able to: • Product standards • Sources of quality and performance standards • Company standards for quality, size, fit and performance • Developing and using specifications • Writing specifications for apparel manufacturing • Professional perspectives on product development
3	Garment Analysis and Specification Development	At the end of this week, the students will be able to: • Role of garment analysis • Style description • Positioning strategy • Sizing and fit • Materials selection • Garment component assembly • Final garment assembly and finishing • Style presentation
4	Creative and Technical Design	At the end of this week, the students will be able to: • Influence on the design process • Creative design • Technical design • Apparel design technology
5	Materials Sourcing and Selection	At the end of this week, the students will be able to: • The global textile complexes • Producer and consumer goods • The role of sourcing decisions in an apparel firm • Materials sourcing processes

		• Selective fabrics • Predicting aesthetics and performances • Evaluating fabric quality
6	Sourcing Product Development and Production	At the end of this week, the students will be able to: • Sourcing issues • Global sourcing • Economic development trade legislation • Sourcing priorities and processes
7	Costs, Costing, Pricing and Profits	At the end of this week, the students will be able to: • Costs and profits • Systems of costing • Stages of costing • Determining product costs • Cost/value relationships • Pricing strategies
8	Apparel Engineering	At the end of this week, the students will be able to: • Productivity concepts • Production strategies • Workflow • Apparel production systems • Production processes • Work study • ergonomics
Mid-semester Examination		
9	Production Planning and Management	At the end of this week, the students will be able to: • Production strategies • Production planning • Human resource management • Inventory management • Waste management

		• Equipment management and plant modernization
10	Preproduction Operations	At the end of this week, the students will be able to: • Initiation of preproduction operations • Marker making • Spreading • Cutting • Off loading
11	Stitches, Seams, thread and Needles	At the end of this week, the students will be able to: • Stitches • Seams • Sewing threads • Needles • Seam appearance and performance
12	Equipment for Assembly and Pressing	At the end of this week, the students will be able to: • Stages of technology advancements • Sewing machine fundamentals • Work aids • Pressing equiment
13	Support Materials	At the end of this week, the students will be able to: • Purposes of support materials • Interlinings • Linings • Other support materials
14	Closures	At the end of this week, the students will be able to: • Purposes and costs of closures • Zippers • Buttons and buttonholes • Snaps and hooks • Snaps and hooks • Elastic • Hooks and loop tape

15	Trims	At the end of this week, the students will be able to: • Types and Sources of Trims • Knit Trims • Embroidery • Appliques, Insect and Lace Trims
End-semester examination		

Teaching and Learning Methods
• Lectures and discussions • Class activities • Industry visits

Required Learning Resources	
References:	1. Apparel Manufacturing by Ruth E Glock and Grace I. Kunz published by Pearson 2. Apparel Design and Production handbook by Gray S. (A technical reference) New York 3. CAD/CAM offers value-added services to apparel industry. Apparel Industry Magazine, 58 (4), CS-3-11 4. ASTM Standards Book, 5. AATCC Standard Book

Facilities Required for Teaching and Learning
-Class room -Board -Projector -Recommended books

Assignments Schedule			**Quiz Schedule**	
No.	**Week Assigned**	**Week Due**	**No.**	**Week**
1	2, 4	3, 5	1, 2, 3	2, 5, 7
2	10, 13, 14	11, 14, 15	4, 5	11,13

Weighting of Assessments	
Quizzes	12.50 %
Assignments	12.50 %
Mid-semester examination	25.00 %
End-semester examination	50.00 %

Grading Criteria		
Letter Grade	**Percentage Marks**	**GPA**
A	**86.25 and above**	**4.00**
A-	**82.50 – 86.24**	**3.70**
B+	**78.75 – 82.49**	**3.30**
B	**75.00 – 78.74**	**3.00**
B-	**71.25 – 74.99**	**2.70**
C+	**67.50 – 71.24**	**2.30**
C	**63.75 – 67.49**	**2.00**
C-	**60.00 – 63.74**	**1.70**
F	**59.99 or lower**	**0**

Course Specifications Developed By:	**Reviewed By (Chairman):**
Dr. Tayyab Naveed	
Date: 01-04-2021	**Date:**

UNIVERSITY OF MAMAGEMENT AND TECHNOLOGY

SCHOOL OF TEXTILE AND DESIGN

MS Textiles

Course Specifications

TX-636

Technical Textiles

Spring……

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http://std.umt.edu.pk/

COURSE SPECIFICATIONS

Basic Information			
Course Title**:**	Technical Textiles		
Course Code**:**	TX-636		
Course credits/week**:**	Theory:03	Lab: 00	Total: 03
Pre-requisite(s)**:**	Fibres and Yarn Studies		
Co-requisite(s)**:**	None		
Program(s) on which the course is given**:**	MS Textiles		
Is the course major or minor element of the program?	Major: ☑	Minor:☐	
School offering the program**:**	School of Textile and Design		
Department offering the course**:**	Department of Textile Engineering		
Academic year/level**:**	1st year		
Revision #**:**	3		
Last revised on (date):	Feb 2021		

Overall Aims of the Course
To get familiar with various types of technical textiles, their input materials, manufacturing techniques, testing methods and application areas.

Key Skills and Attributes to be Developed by the Course	
Knowledge, understanding and application skills	-Knowledge of advances in technical fibres, yarns and fabrics. -Knowledge about the manufacturing of technical textiles and their applications in protection against cold, mechanical impacts, ultra violet radiation, microorganism and heat and flame.
Analytical and problem-solving skills	-Ability to critically analyze the process of manufacturing a vast range of technical textiles.
Communication and interpersonal skills	-Ability to communicate the methods adopted to solve the problems and to present the final solution.

Course Schedule		
Week	**Module**	**Intended Learning Outcomes**
1	**An Overview of Technical Textiles**	• Definition of technical textiles • Milestones in the development of technical textiles • Globalization of technical textiles • Categories of technical textiles • Future of technical textiles

2	**Recent Advances in Technical Fibres**	• Nano fibres • Auxetic fibres • Piezoelectric fibres • Photovoltaic fibres • Shape memory fibres • Degradable and non-gradable fibres • Fibres for medical, environmental and technical applications
3	**Technical Yarns**	• Staple yarns: staple, core-spun, plied, cabled and braided • Filament yarns: mono filament, multifilament, textured and tape • Conducting yarns
4 - 5	**Technical Fabrics**	• Woven structures and their technical applications • Knitted structures and their technical applications • Nonwoven fabrics
6	**Finishing of Technical Textiles**	• Pretreatment of fabrics for finishing • Mechanical finishing processes • Chemical finishing processes
7	**Coating of Technical Textiles**	• Coating materials and their chemistry • Coating materials • Fusible interlining • Laminating
8	**Coloration of Technical Textiles**	• Objectives of coloration • Dye classes and pigments • Dyeing and printing of technical textiles • Colour fastness of technical textiles

Mid-Semester Examination		
9	**Coloration of Technical Textiles**	• Dyeing and printing of technical textiles • Colour fastness of technical textiles
10	**Personal Protective Equipment**	• Protection from cold
11	**Personal Protection Equipment**	• Ballistic protection
12	**Personal Protection Equipment**	• UV protection

13	**Personal Protection Equipment**	• Thermal protection
14	**Personal Protection Equipment**	• Protection from microorganism
15	**Revision**	
End-Semester Examination		
Teaching and Learning Methods		
• Lectures and discussions • Class activities • Lab visits • Industry visits		

Required Learning Resources	
Text Books	1) Handbook of Technical Textiles edited by A R Horrocks and S C Anand 2000, Woodhead Publishing. 2) Handbook of Technical Textiles Vol 1: Technical Textile Processes edited by A. Richard Horrocks and Subhash C Annand 2016, Woodhead Publishing. 3) Textiles for Protection edited by Richard A Scott 2005, Woodhead publishing. 4) Protective Clothing edited by F Wang and Chuansi Gao 2014, Woodhead Publishing. 5) Textiles for Cold Weather Apparel edited by J Williams 2009, Woodhead Publishing.

Facilities Required for Teaching and Learning
• Class room • Board (black or white) • Projector • Recommended books

Assignments Schedule			**Quiz Schedule**	
No.	Week Assigned	Week Due	No.	Week
1	2	3	1	3

2	4	5	2	5
3	7	8	3	11
4	10	11	4	13

Weighting of Assessments	
Quizzes	10%
Assignments	10%
Presentation	05% (12th and 14th week)
Mid-semester examination	25%
End-semester examination	50%

Grading Criteria			
Minimum	**Maximum**	**Grade**	**GPA**
0	59.99	F	0
60	63.74	C-	1.70
63.75	67.49	C	2.00
67.50	71.24	C+	2.30
71.25	74.99	B-	2.70
75	78.74	B	3.00
78.75	82.49	B+	3.30
82.50	86.24	A-	3.70
86.25	100	A	4.00

Course Specifications Developed By:	Reviewed By (Chairman):
Dr. Mumtaz Hasan Malik	

NIVERSITY OF MAMAGEMENT AND TECHNOLOGY

SCHOOL OF TEXTILE AND DESIGN
MS Textiles

Course Specifications

TX-632

Advanced Textile Composites

Spring ……

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http://std.umt.edu.pk/

COURSE SPECIFICATIONS

Basic Information			
Course Title**:**	**Advanced Textile Composites**		
Course Code**:**	TX-632		
Course credits/week**:**	Theory:03	Lab: 00	Total: 03
Pre-requisite(s)**:**	High Performance Fibers		
Co-requisite(s)**:**	None		
Program(s) on which the course is given**:**	MS Textiles		
Is the course major or minor element of the program?	Major: ☑	Minor:☐	
School offering the program**:**	School of Textile and Design		
Department offering the course**:**	Department of Textile Engineering		
Academic year/level**:**	1st year		
Revision **#:**	3		
Last revised on (date):	Feb 2021		

Overall Aims of the Course
To get familiar with various types of industrial composites, structure and form of components of polymer composites, manufacturing techniques, testing methods and applications of advanced textile composites in aerospace, construction and sports industries.

Key Skills and Attributes to be Developed by the Course	
Knowledge, understanding and application skills	-Knowledge of some metals, ceramics and polymers used as matrix in composite materials. -Knowledge about the use of high-performance fibers as reinforcement in textile composites. - Knowledge about manufacturing technologies of textile composites and their testing and applications in various areas ranging from industry to health.
Analytical and problem-solving skills	-Ability to critically analyze the complete process of textile composites manufacturing.
Communication and interpersonal skills	-Ability to communicate the methods adopted to solve the problems and to present the final solution.

Course Schedule		
Week	**Module**	**Intended Learning Outcomes**
1	**Introduction to Composites**	At the end of this week, the students will be able to know about: • Definition of composites • Classification of composites • Structure of matrix • Forms of reinforcement
2	**Composition of Composites**	At the end of this week, the students will be able to know about: • Matrix polymers • Reinforcing materials
3	**Composition of Composites**	At the end of this week, the students will be able to explain about: • Various types of reinforcing structures of composites
4	**Composite Manufacturing**	At the end of this week, the students will be able to discuss: • Wet lay-up processes • Bag moulding processes • Auto-clave moulding process • Merits and demerits of above processes
5	**Composite Manufacturing**	At the end of this week, the students will be able to describe: • Transfer moulding process
6	**Composite Manufacturing**	At the end of this week, the students will be able to discuss: • Compression moulding process
7	**Composite Manufacturing**	At the end of this week, the students will be able to explain: • Injection moulding process
8	**Composite Manufacturing**	At the end of this week, the students will be able to explain: • Filament winding process
Mid-semester Examination		
9	**Machining and Joining Processes**	At the end of this week, the students will be able to explain: • Cutting and joining techniques of composites parts
10	**Testing of Composites**	At the end of this week, the students will be able to determine:

		• Bending properties of textile composites
11	**Testing of Composites**	At the end of this week, the students will be able to determine: • Elastic and compressive properties of composites
12	**Application of Textile Composites**	At the end of this week, the students will be able to discuss: • Use of composites in aerospace industry
13	**Applications of Textile Composites**	At the end of this week, the students will be able to describe: • Use of textile composites in construction industry
14	**Application of Textile Composites**	At the end of this week, the students will be able to explain: • Use of textile composites in medical industry
15	**Revision**	At the end of this week, the students will be able to explain: • Use of textile composites in sports industry and defense
End-semester Examination		

Teaching and Learning Methods
• Lectures and discussions • Class activities • Lab visits • Industry visits

Required Learning Resources	
Text Book(s):	1) Handbook of Composite Fabrication, Edited by Guneri Akovali (2001) 2) Design and Manufacture of Textile Composites, Edited by A.C. Long (2005) 3) Composites Forming Technologies, Edited by A.C. Long (2007) 4) Carbon Fibres and their Composites by Peter Morgan (2005)

Facilities Required for Teaching and Learning
• Class room • Board (Black or White) • Projector • Recommended books

Assignments Schedule			**Quiz Schedule**	
No.	Week Assigned	Week Due	No.	Week
1	3	4	1	2

2	6	7	2	5
3	9	10	3	9
4	12	13	4	11

Weighting of Assessments	
Quizzes	10%
Assignments	10%
Presentation	05% (13th & 14thweek)
Mid-semester examination	25%
End-semester examination	50%

For Graduate Courses			
Minimum	**Maximum**	**Grade**	**GPA**
0	59.99	F	0
60	63.74	C-	1.70
63.75	67.49	C	2.00
67.50	71.24	C+	2.30
71.25	74.99	B-	2.70
75	78.74	B	3.00
78.75	82.49	B+	3.30
82.50	86.24	A-	3.70
86.25	100	A	4

Course Specifications Developed By:	Reviewed By (Chairman):
Dr. Mumtaz Hasan Malik	