

Curriculum
of
Diploma Programme
in
Garment Technology



State Board of Technical Education (SBTE)
Bihar

Semester – III

Teaching & Learning Scheme

Board of Study	Course Codes	Course Titles	Teaching & Learning Scheme (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2452301	Advanced Pattern Making	3	-	4	2	9	6
	2452302	Garment Manufacturing Process	3	-	4	2	9	6
	2452303	Textile and Fashion Designing	3	-	4	2	9	6
	2418305	Python Programming (CE, CSE, AIML, ME, ME (Auto)., ELX, ELX (R), MIE, FTS, CRE, CHE, TE, CACDDM, GT)	3	-	4	2	9	6
	2452306	Summer Internship – I (After 2 nd Sem) (Common for all programmes)	-	-	2	2	4	2
	2452307	Computer Graphics for Garment Manufacturing	-	-	4	2	6	3
	2400208	Sports, Yoga and Meditation (Common for All Programmes)	-	-	1	1	2	1
Total			12	-	23	13	48	30

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

Semester - III

Assessment Scheme

Board of Study	Course Codes	Course Titles	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2452301	Advanced Pattern Making	30	70	20	30	20	30	200
	2452302	Garment Manufacturing Process	30	70	20	30	20	30	200
	2452303	Textile and Fashion Designing	30	70	20	30	20	30	200
	2418305	Python Programming (CE, CSE, AIML, ME, ME (Auto)., ELX, ELX (R), MIE, FTS, CRE, CHE, TE, CACDDM, GT)	30	70	20	30	20	30	200
	2452306	Summer Internship – I (After 2 nd Sem) (Common for all programmes)	-	-	10	15	10	15	50
	2452307	Computer Graphics for Garment Manufacturing	-	-	20	30	20	30	100
	2400208	Sports, Yoga and Meditation (Common for All Programmes)	-	-	25	-	10	15	50
Total			120	280	135	165	120	180	1000

Legend:

PTA: Progressive Theory Assessment in classroom (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro-projects, industrial visits, self-learning, any other student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

A) Course Code	: 2452306(P2452306/S2452306)
B) Course Title	: Summer Internship -I (Common For all Programmes)
C) Pre- requisite Course(s)	:
D) Rationale	:

Diploma students are required to give exposure of their own diploma programme related industrial hardware, software and practices, just after completing one semester, so that they can correlate this industrial exposure with the concept being taught in the branch specific specialized engineering courses in forthcoming semesters. Mentors/Coordinators/ Teachers need to map the academic contents of the programme of study with the activities of this industrial exposure and are advised to follow the 'Whole to Part' approach to make the students aware about the potential industry's expected outcomes & setup ('Whole') from the diploma programme – and then teaching the related concepts ('Part') of the same in subsequent semesters. In this way before actually being exposed to academic input specific to diploma programmes, the students need to be sent to the nearby/local industries and also may be advised to explore information related to their programme of study using different sources related to potential employment opportunities of both wage and self-employment, job function, job position, nearby relevant industries and so on.

The summer internship will provide the direction to the students and also help in mind mapping to plan their futuristic course of action, after passing the diploma. This would also bridge the gap between their virtual imagination about the outcome of the programme and real happenings related to the diploma programme.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/laboratory/workshop/field/ industry.

After completion of the course, the students will be able to-

- CO-1** Comprehend the practices of identified industry or world of work related to diploma engineering programme of study.
- CO-2** Map real equipment, processes, product, management, operations etc. to the course of study through various glimpses of input, process and output in different type of industries.
- CO-3** Identify the probable enterprises /startups for futuristic planning and self-growth.
- CO-4** Identify the probable job function and job position in their relevant programme of study.

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	-	-	1	-	-	1		
CO-2	3	-	-	1	-	-	1		
CO-3	3	-	-	-	1	-	2		
CO-4	3	-	-	-	1	-	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2452306	Summer Internship -I	-	-	02	02	04	02

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2452306	Summer Internship -I	-	-	10	15	10	15	50

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) **Suggested Instructional/Implementation Strategies:** Mentors/ Coordinators/ Teachers need to plan and implement the summer internship in their respective programme as per the outcome expected from the programme. However in general, summer internship would help in exploring and exposing the student to the below mentioned dimensions of the world of work. These dimensions can further be explored in depth as per the need and advancement in respective programmes in later stages. Mentors/Coordinators/ Teachers need to map the academic contents of the programme of study with the activities of this industrial exposure and are advised to follow the whole to part approach to make the students aware about the potential industry's expected outcomes & setup ('Whole') from the specific diploma programme and then teaching the related concepts ('Part') of the same in subsequent semesters.

- Industrial Layout
- Organizational Structure
- Corporate Communications
- Strategic, Rolling and Developmental plans
- Maintenance Procedures
- Inventory Control and Management System
- Purchase and Store Procedures
- Major Machinery, Tools, Equipment, Devices, Software, Control System etc.
- Product Development, Manufacturing, Packaging and Delivery
- Project Management
- Operation and Maintenance
- Warehouse Management
- Assembly Line
- Quality Assurance and Testing Cell
- Process/ Software Development/ Fabrication/ Construction Work Management
- Testing and Quality Assurance Practices
- Total quality management
- Callibration and Certification practices
- Safety Practices
- Industrial Acts
- Industrial Grievances
- Behavioural Aspects
- Conduction of Meetings and Discussions
- Sales and Marketing Strategies
- Forecasting and Target Setting
- Production Planning and Control
- Storage Retrieved and Material handling Practices
- Automation and Control Facilities
- Enterprise Resource Planning (ERP)
- Supply Chain
- Customer Satisfaction Strategies
- Finance and Accounts
- Research and Development
- Promotion and Capacity Building Schemes
- Reduce, Reuse and Recycling Efforts and Policies
- Recognitions and Rewards
- After Sale Services
- Promotional Avenues
- Social Corporate responsibilities

J) Assessment of Summer Internship -I

S. No.	Criteria of Assessment	% of Weightage
1.	Maintaining the log book after having exposure to different types of industry/ world of work	15
2.	Preparing the list of job functions and job positions of relevant programme	20
3.	Identify the probable enterprise/ startup for futuristic planning	15
4.	Report writing of summer internship as per the prescribed format	30
5.	Presentation of Report	20
Total		100

Note: S. no. 1 to 3 shall be considered for progressive assessment. While S. No. 4 & 5 shall be considered for end term assessment

- A) **Course Code** : 2418305(T2418305, P2418305,S2418305)
- B) **Course Title** : Python Programming
(CE, CSE, AIML, ME, ME (Auto), ELX, ELX (R), MIE, FTS, CRE, CHE, TE, CACDDM, GT, RE)
- C) **Pre- requisite Course(s)** :
- D) **Rationale** :

Python programming has emerged as a popular programming language across wide range of application segments from Scientific to Machine Learning to mobile app development, and so on. Python is a high-level general-purpose programming language.

Because code is automatically compiled to byte code and executed, Python is suitable as a scripting language, Web application implementation language, etc.

In Python there are multiple levels of organizational structure: functions, classes, modules, and packages. These assist in organizing code. An excellent and large example is the Python standard library.

The Object-oriented Python provides a consistent way to use objects: in Python it is easy to implement new object types (called classes in object-oriented programming).

This introductory course to learn basic Python programming features which can be used as building blocks to develop different kind of applications using Python 3.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Use various data types and operators in formation of expressions.
- CO-2** Write and execute programs using control statements.
- CO-3** Perform relevant operations on Sequence data types
- CO-4** Create functions in modules
- CO-5** Use numpy in writing python programs
- CO-6** Handle data files and exceptions.

- F) **Suggested Course Articulation Matrix (CAM):**

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CO-1	1	-	1	-	-	-	-		
CO-2	1	2	2	1	-	1	-		
CO-3	1	2	2	1	-	1	-		
CO-4	1	2	2	1	-	1	2		
CO-5	1	2	2	1	-	1	-		
CO-6	1	2	2	1	-	1	1		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

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	2418305	Python programming	03	-	04	02	09	06

Note: Prefix will be added to Course Code if applicable (T for theory Paper, P for Practical Paper and S for Term work)

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- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2418305**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Differentiate between Procedure Oriented P and Object Oriented Programming approach with example. <i>TSO 1b.</i> Use the concept of Lvalue and Rvalue <i>TSO 1c.</i> Write python program using various data types and operators	Unit 1: Fundamentals of Python Programming Syntax 1.1 Introduction to Python Character Set, Python Tokens, Variables, Lvalue and Rvalue Concepts, and the Use of Comments. 1.2 Overview of Data Types: • Number Types: Integer, Floating Point, Complex • Boolean Type • Sequence Types: String, List, Tuple • None Type • Mapping Type: Dictionary • Distinction between Mutable and Immutable Data Types 1.3 Understanding Operators: • Arithmetic Operators • Relational Operators • Logical Operators • Assignment Operator • Augmented Assignment Operators • Expressions and Statements • Type Conversion and Input/Output Mechanisms • Precedence of Operators • Expression Evaluation	CO-1
<i>TSO 2a.</i> Write Python program using decision making statements <i>TSO 2b.</i> Write Python program using loop structure to solve iterative problems	Unit-2.0 Conditional and Iterative statements 2.1 Conditional statements: • simple if statement • if- else statemen • if-elif-else statement 2.2 Iterative statements: • while loop • for loop • range function • break and continue statements • nested loops	CO-2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 3a.</i> Perform various operations on string using string operators and methods <i>TSO 3b.</i> Perform various operations on List using list operators and methods <i>TSO 3c.</i> Perform various operations on tuples using tuples operators and methods <i>TSO 3d.</i> Perform various operations on set using set methods <i>TSO 3e.</i> Perform various operations on dictionary using dictionary methods	Unit-3.0 String, List, Tuples, set and Dictionary 3.1 String: - Indexing - string operations (concatenation, repetition, membership & slicing) - traversing a string using loops - built-in functions. 3.2 Lists: - Introduction - Indexing in list - list operations: concatenation, repetition, membership & slicing, traversing a list, built- in list functions, linear search on list of numbers and counting the frequency of elements in a list 3.3 Tuples: Creating, initializing, accessing elements, tuple assignment, performing operations on tuples, tuple methods and built-in functions, nested tuples 3.4 Set: Creating set, traversing, adding, removing data in set, performing set operations like join, Union intersection, difference 3.5 Dictionary: accessing items in a dictionary using keys, mutability of dictionary: adding a new item, modifying an existing item, built-in dictionary functions.	CO-3
<i>TSO 4a.</i> Create and use user defined functions to implement modular programming approach <i>TSO 4b.</i> Differentiate variable scope with example. <i>TSO 4c.</i> Import and use Python modules, libraries	Unit-4.0 Python Functions, Modules and packages 4.1 Functions: types of function (built- in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, Lambda functions, returning value, scope of a variable: global scope, local scope 4.2 Modules and Packages: Importing module using 'import' Regular Expressions, Exception Handling, PyPI Python Package Index, Pip Python package manager, Importing Libraries and Functions	CO-4
<i>TSO 5a.</i> Write simple Python programs using numpy <i>TSO 5b.</i> Use Numpy array in python program <i>TSO 5c.</i> Use Numpy to solve linear algebra problem.	Unit-5.0 Numpy 5.1 Introduction to NumPy 5.2 Installation of NumPy 5.3 NumPy Arrays: Understanding the NumPy array	CO-5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	- The fundamental data structure in NumPy. - Creation of arrays using different methods: np.array(), np.zeros(), np.ones(), etc. - Exploring array attributes like shape, size, and dimensions. 5.4 Array Indexing and Slicing: - Accessing elements and subarrays in NumPy arrays using indexing and slicing. - Demonstration of the difference between one-dimensional and multi-dimensional array indexing. 5.5 Array Operations: - Performing element-wise operations on NumPy arrays. - Exploring universal functions (ufuncs) for mathematical operations. 5.6 Linear Algebra with NumPy: - Introduction to linear algebra operations using NumPy. - Matrix multiplication, determinant, inverse, and solving linear equations. 5.7 File input and output with Numpy 5.8 Broadcasting in Numpy	
<i>TSO 6a.</i> Explain different types of Exceptions in python <i>TSO 6b.</i> Write Python programs for exception handling in Python <i>TSO 6c.</i> Differentiate different modes of file opening. <i>TSO 6d.</i> Perform read, Write, Append operations in files	Unit 6: Exception and File Handling in Python 6.1 Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes. 6.2 File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files, file access modes	CO-6

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2418305

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Write, execute and debug simple Python program using Integrated Development and Learning Environment (IDLE) <i>LSO 1.2.</i> Write and execute simple 'C' program using variables, arithmetic expressions.	1.	a) Download and Install IDLE. Write and execute Python program to- b) Calculate the Area of a Triangle where its three sides a, b, c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) c) Swap Two Variables d) Solve quadratic equation for real numbers.	CO-1
<i>LSO 2.1.</i> Write and execute python programs using conditional statements. <i>LSO 2.2.</i> Write and execute python programs using various types of Loop statements	2.	Write and execute Python program to- a) Check if a Number is Positive, Negative or zero. b) Check whether the given year is a Leap Year. c) Print all Prime Numbers in an Interval. d) Display the multiplication Table based on the given input. e) Print the Fibonacci sequence. f) Find the Factorial of a Number.	CO-2
<i>LSO 3.1.</i> Write and execute Python program to perform various operations on string using string operators and methods	3.	Write and execute Python program to- a) Check whether the string is Palindrome b) Reverse words in a given String in Python c) identify in a strings the name, position and counting of vowels. d) Count the Number of matching characters in a pair of string (set) e) Python program for removing i-th character from a string	CO-2, CO-3
<i>LSO 4.1.</i> Write and execute Python program to perform various operations on List using List operators and methods	4.	Write and execute Python program to- a) find largest number in a given list without using max(). b) find the common numbers from two lists. c) create a list of even numbers and another list of odd numbers from a given list. d) To find number of occurrences of given number without using built-in methods.	CO-2, CO-3
<i>LSO 5.1.</i> Write and execute Python program to perform various operations on Tuple using Tuple operators and methods.	5.	Write and execute Python program to- a) find the index of an item of a tuple. b) find the length of a tuple. c) to reverse a tuple. d) Write a Python program to sort a list of tuple by its float element. Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')] Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]	CO-2, CO-3

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 6.1.</i> Write and execute Python program to perform various operations on sets using set methods.	6.	Write and execute Python program to- a) create an intersection of sets. b) create a union of sets. c) create set difference. d) check if two given sets have no elements in common.	CO-2, CO-3
<i>LSO 7.1.</i> Write and execute Python program to perform various operations on Dictionary using Dictionary methods	7.	Write and execute Python program to- a) Write a Python script to concatenate two dictionaries to create a new one b) Write a Python script to merge two Python dictionaries. c) Write a Python program to combine two dictionary adding values for common keys. d1 = {'a': 100, 'b': 200, 'c':300} d2 = {'a': 300, 'b': 200, 'd':400} Sample output: d({'a': 400, 'b': 400, 'd': 400, 'c': 300})	CO-2, CO-3
<i>LSO 8.1.</i> Write and execute Python program to create user defined functions and call them.	8.	Write and execute Python program to- a) Write a Python function for reversing a string and call it. b) Write a Python function for calculating compound interest and call it. c) Write a Python function for calculating the factorial of a number and call it to calculate $n!/(r!*(n-r)!)$ where symbol "!" stands for factorial.	CO-2, CO-4
<i>LSO 9.1.</i> Write and execute Python program to define a numpy array. <i>LSO 9.2.</i> Develop and execute Python program Using various types of Numpy operation.	9.	a) Write a python program to create a Numpy array filled with all zeros b) Write a python program to check whether a Numpy array contains a specified row c) Write a python program to Remove rows in Numpy array that contains non-numeric values d) Write a python program to Find the number of occurrences of a sequence in a NumPy array e) Write a python program to Find the most frequent value in a NumPy array f) Write a python program to Combine a one and a two-dimensional NumPy Array g) Write a python program to Flatten a Matrix in Python using NumPy h) Write a python program to Interchange two axes of an array	CO-2, CO-5
<i>LSO 10.1.</i> Develop and execute Python program to handle various type of exceptions. <i>LSO 10.2.</i> Develop and execute Python program to perform file operations.	10.	a) Using exception handling feature such as try...except, try finally- write minimum three programs to handle following types of exceptions. i. Type Error ii. Name Error	CO-6, CO-1, CO-2,

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
		iii. Index Error iv. Key Error v. Value Error vi. IO Error vii. Zero Division Error b) Write Python program to demonstrate file operations.	

Note: in addition to above listed practical, students are suggested to practice all the examples covered by the teacher during theory sessions.

L) Suggested Term Work and Self Learning: S2418305 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. **Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

b. Micro Projects:

1. Create a shop billing system
2. Create income tax calculation system.
3. Develop number guessing game (random integer will be selected by the system and the user has to guess that integer in the minimum number of guesses. Maximum 5 guess allowed.)
4. Assign numbers to alphabet a-z as (1-26). User will input a word. System will convert it to a number by adding all the individual alphabet of that word.
5. Design a basic calculator program that performs arithmetic operations like addition, subtraction, multiplication, and division based on user input.
6. Any other micro-projects suggested by subject faculty on similar line.

(Students may use file and sequence data types to develop above listed applications)

c. Other Activities:

1. Seminar Topics:
 - Tkinter widgets in python
 - Python date/time module and its applications
 - wxPython and its applications

- M) Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	10%	10%	15%	16%	16%	10%	16%
CO-2	15%	15%	15%	16%	16%	15%	16%
CO-3	25%	25%	20%	18%	18%	25%	18%
CO-4	15%	15%	15%	16%	16%	15%	16%
CO-5	25%	25%	25%	18%	18%	25%	18%
CO-6	10%	10%	10%	16%	16%	10%	16%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

- N) Suggested Specification Table for End Semester Theory Assessment:** Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Basics of Python Programming syntax	4	CO-1	7	3	2	2
Unit-2.0 Conditional and Iterative statements	6	CO-2	10	3	3	4
Unit-3.0 3.0 String, List, Tuples, set and Dictionary	12	CO-3	18	5	3	10
Unit-4.0 Python Functions, Modules and packages	7	CO-4	10	3	3	4
Unit-5.0 Numpy	12	CO-5	18	4	5	9
Unit-6.0 Exception and File Handling in Python	7	CO-6	7	2	2	3
Total	48	-	70	20	18	32

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Write and execute Python program to- a) Calculate the Area of a Triangle where its three sides a,b,c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) b) Swap Two Variables c) Solve quadratic equation for real numbers.	CO-1	40	50	10
2.	Write and execute Python program to- a) Check if a Number is Positive, Negative or zero. b) Check whether the given year is a Leap Year. c) Print all Prime Numbers in an Interval. d) Display the multiplication Table based on the given input. e) Print the Fibonacci sequence. f) Find the Factorial of a Number.	CO-2	40	50	10
3.	Write and execute Python program to- a) Check whether the string is Palindrome b) Reverse words in a given String in Python c) identify in a strings the name, position and counting of vowels. d) Count the Number of matching characters in a pair of string (set) e) Python program for removing i-th character from a string	CO-2, CO3	40	50	10
4.	Write and execute Python program to- a) find largest number in a given list without using max(). b) find the common numbers from two lists. c) create a list of even numbers and another list of odd numbers from a given list. d) To find number of occurrences of given number without using built-in methods.	CO-2, CO-3	40	50	10
5.	Write and execute Python program to- a) find the index of an item of a tuple. b) find the length of a tuple. c) to reverse a tuple. d) Write a Python program to sort a list of tuple by its float element. Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')] Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]	CO-2, CO-3	40	50	10
6.	Write and execute Python program to- a) create an intersection of sets. b) create a union of sets. c) create set difference. d) check if two given sets have no elements in common.	CO-2, CO-3	40	50	10
7.	Write and execute Python program to- a) Write a Python script to concatenate two dictionaries to create a new one	CO-2, CO-3	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
	b) Write a Python script to merge two Python dictionaries. c) Write a Python program to combine two dictionary adding values for common keys. $d1 = \{ 'a': 100, 'b': 200, 'c': 300 \}$ $d2 = \{ 'a': 300, 'b': 200, 'd': 400 \}$ Sample output: $d(\{ 'a': 400, 'b': 400, 'd': 400, 'c': 300 \})$				
8.	Write and execute Python program to- a) Write a Python function for reversing a string and call it. b) Write a Python function for calculating compound interest and call it. c) Write a Python function for calculating the factorial of a number and call it to calculate $n!/(r! * (n-r)!)$ where symbol "!" stands for factorial.	CO-2, CO-4	40	50	10
9.	a) Write a python program to create a Numpy array filled with all zeros b) Write a python program to check whether a Numpy array contains a specified row c) Write a python program to Remove rows in Numpy array that contains non-numeric values d) Write a python program to Find the number of occurrences of a sequence in a NumPy array e) Write a python program to Find the most frequent value in a NumPy array f) Write a python program to Combine a one and a two-dimensional NumPy Array g) Write a python program to Flatten a Matrix in Python using NumPy Write a python program to Interchange two axes of an array	CO-2, CO-5	40	50	10
h)	Using exception handling feature such as try...except, try finally-write minimum three programs to handle following types of exceptions. viii. TypeError ix. NameError x. IndexError xi. KeyError xii. ValueError xiii. IOError xiv. ZeroDivisionError	CO-2, CO-6	40	50	10
i)	Write and execute Python program to- a) Calculate the Area of a Triangle where its three sides a,b,c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) b) Swap Two Variables c) Solve quadratic equation for real numbers.	CO-1	40	50	10

Legend:

PRA*: Process Assessment

PDA*: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	Computer system	Processor Intel Core i5, 4 GB RAM, 15 GB free disk space	All
2.	Integrated Development and Learning Environment (IDLE)	S/w to be downloaded for python 3.11.3 or higher	All

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Introduction to Computing and Problem-Solving using Python	E. Balagurusamy	McGraw Hill Education (India) Pvt. Ltd. 1 st Edition /2016
2.	Learning Python Programming	Jeffrey Elkner, Allan B. Downey, Chris Meyers	Samurai Media Limited. 2016
3.	Python Programming	Ashok Namdev Kamthane and Amit Ashok Kamthane	McGraw Hill Education (India) Pvt. Ltd. 2020, 2 nd Edition
4.	Programming in Python	Dr. Pooja Sharma	BPB Publications 2017

(b) Online Educational Resources:

1. <https://docs.python.org/3/tutorial/>
2. <https://www.w3schools.com/python/>
3. <https://www.tutorialspoint.com/python/index.htm>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

- A) **Course Code** : 2452301(T2452301/P2452301/S2452301)
- B) **Course Title** : Advanced Pattern Making
- C) **Pre- requisite Course(s)** : Pattern Making
- D) **Rationale** :

Pattern Making is a blueprint for the garment, on the basis of which the fabric is cut. It is the technical drawing or drafting of a garment. Standard size charts, dress forms or figure are measured, these measurements are then converted into 2D patterns and then garments are made from them. The detail and technique behind each pattern ensure that garments are made to specification with a minimal margin of error. In this course the students will have advanced skills in pattern making and drafting of complex patterns for the industry

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Adapt basic blocks into advanced & complex pattern variations
- CO-2** Make advanced adaptations to a pattern to change structural and/or style features of Ladies garments.
- CO-3** Apply advanced pattern making principles to develop various Men's garments
- CO-4** Apply advanced pattern making principles for knit/stretch fabrics.
- CO-5** Use Principles of draping to make body fitted pattern blocks.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	2	2	2	2	-	2		
CO-2	3	2	3	2	-	-	2		
CO-3	3	2	3	3	-	-	2		
CO-4	3	3	2	2	-	2	2		
CO-5	3	2	3	2	-	-	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme :

Board of Study	Course Code	Course Title	Teaching & Learning Scheme (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
GT	2452301	Advanced pattern Making	03	-	04	02	09	06

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning, etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro-projects, industrial visits, any other student activities, etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources, etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of the teacher to ensure the outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
GT	2452301	Advanced pattern Making	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in the classroom (includes class test, mid-term test, and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro-projects, industrial visits, self-learning, any other student activities, etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignments, micro-projects, seminars, and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria for internal as well as external assessment may vary as per the requirement of the respective course. For valid and reliable assessment, the internal faculty should prepare a checklist & rubrics for these activities.

I) Course Curriculum Detailing: This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW), and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to the attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020-related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS), and others must be integrated appropriately.

J) Theory Session Outcomes (TSOs) and Units: T2452301

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Explain the use of darts in shaping a garment. TSO 1b. Differentiate between the different positions of darts and their purpose. TSO 1c. Select the appropriate type of darts for the necessary fit and shape of garments. TSO 1d. Displace darts by slash and pivot methods. TSO 1e. Conduct truing of darts. TSO 1f. Describe the application of darts in garments. TSO 1g. Differentiate between the various types of skirt based on lengths of skirts. TSO 1h. Adapt basic skirt into four gore and six gore skirt and its variations. TSO 1i. Construct Paneled skirts. TSO 1j. Adapt basic skirt into wrapped skirts. TSO 1k. Differentiate between set in sleeves and non-set in sleeves. TSO 1l. Construct Kimono Sleeve, Raglan Sleeve, Magyar Sleeve & Dolman Sleeve. TSO 1m. Describe & construct the various types of cuffs. TSO 1n. Identify flat & Raised collars and their varieties. TSO 1o. Construct Raised collars.	Unit-1.0 Advanced Pattern Adaptations 1.1 Darts: Shaping using darts, need for darts & various positions 1.2 Types of darts: waist (Upper and Lower garments), shoulder, neckline, armhole, side, centre front and back darts, concealment of darts (princess seams) 1.3 One dart blocks, two dart blocks, multi dart blocks. 1.4 Methods of transferring darts in Blocks: Slash method, pivot method and Truing of darts. 1.5 Skirts: Types of Skirts Based on different Lengths and styles Basic Skirt converted into a flared four gore Skirt. Basic Skirt converted into a six piece Skirt with trumpet hem, Paneled Skirts, Wrapped Skirts. 1.6 Sleeves : Types of sleeves: Set in sleeves And Sleeve and garment in one and its Varieties i.e. Kimono Sleeve, Raglan Sleeve, Magyar Sleeve, Dolman Sleeve. 1.7 Cuffs: Varieties of cuffs- detachable cuff, Gauntlet cuff, barrel cuff, Beret cuff, Rollup cuff, French cuff, Button loop Cuff, Shirt cuff. 1.8 Collars: Types of Collars - (i) Flat Collars and it's Varieties. (ii) Raised Collars and its Varieties. (iii) Varieties in neck-lines without Collars like Cowl and raised neckline.	CO1, CO2
TSO 2a. Adapt the one dart basic bodice block into A line Kurta with sleeves. TSO 2b. Differentiate between Plain salwar, modern salwar, dhoti salwar and patyala salwar TSO 2c. Construct plain Salwar and a few common adaptations like modern salwar, dhoti salwar & patyala salwar with layout. TSO 2d. Construct churidaar with layout. TSO 2e. Differentiate between Plain Choli, Katori Choli and Princess Choli.	Unit- 2.0 Women's Garments 2.1 Women's Kurta Styles: Drafting of straight /A- line Kurta with sleeves and back darts by adapting basic bodice block. 2.2 Various types of Salwar's & Churidaar's. Drafting of Plain salwar, modern salwar, dhoti salwar, patyala salwar, cutting a churidaar on bias and with bias bag. 2.3 Types of Saree blouses: Drafting of Plain Choli, Katori Choli, Princess Choli.	CO1, CO2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 2f. Demonstrate drafting of Saree blouses i.e. Plain Choli, Katori Choli and Princess Choli. TSO 2g. Demonstrate drafting of Ladies Pyjamas and top/Night suit/ Nightdress. TSO 2h. Draft a two dart fitted bodice block for ladies.	2.4 Drafting of Ladies Pyjamas and top/Night suit/ Nightdress. 2.5 Women's two dart bodice block.	
TSO 3a. Identify suitable fabrics, and Styles of Gents Garments. TSO 3b. Differentiate between Formal & Casual Shirts. TSO 3c. Demonstrate drafting of Gents Shirt. TSO 3d. Differentiate between Gents Shorts, Bermuda's and Trousers. TSO 3e. Demonstrate drafting of Gents Trousers. TSO 3f. Demonstrate drafting of Gents Kalidar Kurta & Pyjama. TSO 3g. Differentiate between Men's Indian and western Jackets and Coats. TSO 3h. Demonstrate drafting of Gents Nehru Jacket.	Unit- 3.0 Gent's Garments 3.1 Fabrics, Prints and Styles of Gents Garments. 3.2 Types of Shirts: Formal & Casual. Drafting of Formal Gents Shirt. 3.3 Trouser, Bermuda's & Shorts Drafting of Gents Trousers 3.4 Gents Kurta's & Pyjama's Drafting of Gents Kalidar Kurta. 3.5 Men's Jackets & Coats. Drafting of Gents Nehru Jacket.	CO1, CO3
TSO 4a. Differentiate between bodice blocks for woven and Knit fabrics. TSO 4b. Select the appropriate type of fabrics for knitwear. TSO 4c. Demonstrate skills to adapt basic block for stretch fabrics. TSO 4d. Draft a basic tank top using a block developed for knit fabrics. TSO 4e. Construct a one piece swimsuit. TSO 4f. Demonstrate skills to draft a one/ two piece gown using a block adapted for knit fabrics.	Unit- 4.0 Knitwear 4.1 Introduction to Knitwear. Types of Knit wear garments. 4.2 Adaptation of a bodice block for stretch fabrics. 4.3 Drafting of a Tank top for knit fabric 4.4 Swimwear and Lingerie: Drafting of a one piece swimwear for Knit fabric 4.5 Gowns: Drafting of one piece/two piece gown of knit fabric.	CO1, CO2, CO4,
TSO 5a. Describe the various types of drape forms. TSO 5b. Identify fabrics used in draping. TSO 5c. Describe the various methods of draping. TSO 5d. Recall guidelines for draping. TSO 5e. Construct a Draped bodice block- front and back by using woven fabric. TSO 5f. Carry out truing of draped bodice block. TSO 5g. Construct a Draped bodice block- front and back by using Knit fabric. TSO 5h. Construct a Draped Skirt block- front and back by using woven fabric. TSO 5i. Carry out truing of draped Skirt block.	Unit-5.0 Draping 5.1 Drape forms, types of drape forms, material used in draping. 5.2 Methods of draping, guidelines for draping. 5.3 Draping of bodice block- front and back by using woven fabric, truing of bodice block. 5.4 Draping of dart-less bodice using knit fabric. 5.5 Draping of basic straight skirt using woven fabric. Truing of basic skirt drape.	CO5

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452301

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSOs 1.1 Carry out Dart Displacements using the slash method (1/4 th Scale) for the following Bodice one dart transfer to armhole dart. Bodice one dart transfer to waist & underarm dart. Bodice one dart transfer to two darts at waistline. Bodice Princess Seams. Bodice darts converted to gathers at shoulder. Bodice darts converted to two released tucks at waistline.	1.	Identify the different locations for dart transfer	CO1, CO2
LSOs 2.1 Carry out Basic Skirt Adaptations using 1/4 th Scale. Basic Skirt converted into A- Line Skirt. Basic A- line Skirt converted into a flared four gore Skirt. Basic Skirt converted into a six piece Skirt with trumpet hem. Paneled Skirt. Wrapped Skirts. Half Circular and full circular skirts.	2.	Identify the different adaptations of designs in skirts.	CO1, CO2
LSOs 3.1 Identify basic block and unshaped sleeve necessary. LSOs 3.2 Using the basic block and sleeve, Adapt the draft as per the pattern required for Kimono, Raglan, Magyar, and Dolman Sleeve.	3.	Draft Sleeve and Garment in one, through adaptation from basic block for women's garments. 3.1 Kimono Sleeve 3.2 Raglan Sleeve 3.3 Magyar Sleeve 3.4 Dolman Sleeve	CO1, CO2
LSOs 4.1 Identify the different Measurements necessary to construct a Shawl collar, Convertible collar, Raised neckline & cowl neckline. LSOs 4.2 Use Instructions and diagram to construct Shawl Collar, Convertible collar, Raised neckline and Cowl neckline.	4.	Construct the Shawl Collar, Convertible collar, Raised neckline and Cowl neckline.	CO1, CO2
LSOs 5.1 Identify the different Measurements necessary to construct a straight /A- line Kurta with sleeves and back darts. LSOs 5.2 Use Instructions and diagram to adapt the one dart basic bodice block for women into a straight /A- line Kurta with sleeves and back darts.	5.	Adapt the one dart basic bodice block for women into a straight /A- line Kurta with sleeves and back darts.	CO1, CO2
LSOs 6.1 Identify the different Measurements necessary to construct any one type of Salwar & Churidaar. LSOs 6.2 Using Instructions and diagram Construct any one type of Salwar & Churidaar	6.	Construct any one type of Salwar & Churidaar.	CO1, CO2
LSOs 7.1 Identify the different measurements required for construction of Choli's LSOs 7.2 Using instructions & diagram draft the Plain	7.	Drafting of Choli's	CO1, CO2

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
Choli, Katori Choli & Princess Choli.			
LSOs 8.1 Identify the different measurements required for construction of a Ladies Pyjamas with top/Night suit or a Nightdress. LSOs 8.2 Using instructions & diagram draft or adapt the basic bodice block suitably for Ladies Pyjamas with top/Night suit or Nightdress.	8.	Draft a Ladies Pyjamas with top/Night suit or Nightdress.	CO1, CO2
LSOs 9.1 Identify the measurements necessary to construct a fitted two darts Bodice block for women's wear. LSOs 9.2 Using instructions & diagram draft the fitted two darts Bodice block for women's wear.	9.	Construct a fitted two darts Bodice block for women's wear.	CO1, CO2
LSOs 10.1 Identify the different measurements required for construction of a Formal Gent's Shirt with full sleeves, Shirt Collar and Cuff . LSOs 10.2 Using instructions & diagram draft a Formal Gent's Shirt with full sleeves, Shirt Collar and Cuff based on Standard Measurements.	10.	Draft a Formal Gent's Shirt with full sleeves, Shirt Collar and Cuff based on Standard Measurements.	CO3
LSOs 11.1 Identify the measurements necessary to construct a full length Gents Trouser with back bound pocket and side seam pocket. LSOs 11.2 Using instructions & diagram draft a full length Gents Trouser with back bound pocket and side seam pocket based on Standard Measurements.	11.	Draft a full length Gents Trouser with back bound pocket and side seam pocket based on Standard Measurements.	CO3
LSOs 12.1 Identify the measurements necessary to construct a full length Kalidar Kurta for Gents LSOs 12.2 Using instructions & diagram draft a full length Kalidar Kurta for Gents with Gussets and Side pockets.	12.	Draft a full length Kalidar Kurta for Gents with Gussets and Side pockets using Standard Measurements.	CO3
LSOs 13.1 Identify the measurements necessary to construct a sleeveless Nehru Jacket with Stand collar. LSOs 13.2 Using instructions & diagram draft a sleeveless Nehru Jacket with Stand collar, two bound pockets and one welt pocket, using Standard Measurements.	13.	Draft a sleeveless Nehru Jacket with Stand collar, two bound pockets and one welt pocket, using Standard Measurements.	CO3
LSOs 14.1 Identify the measurements necessary to adapt the two dart Ladies bodice block suitably for Stretch Fabrics. LSOs 14.2 Using instructions & diagram adapt the two dart Ladies bodice block suitably for Stretch Fabrics, using Standard Measurements.	14.	Adapt the two dart Ladies bodice block suitably for Stretch Fabrics, using Standard Measurements.	CO2, CO4

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSOs 15.1 Identify the measurements necessary to draft a tank top, using Standard Measurements, for Stretch Fabrics. LSOs 15.2 Using instructions & diagram adapt the stretch fabric block suitably for a tank top, using Standard Measurements.	15.	Using the Stretch Fabric block, draft a tank top, using Standard Measurements.	CO2, CO4
LSOs 16.1 Identify the measurements necessary to draft a one piece/two piece gown, using Standard Measurements, for Stretch Fabrics. LSOs 16.2 Using instructions & diagram adapt the stretch fabric block suitably for a one piece/two piece gown, using Standard Measurements.	16.	Draft a one piece/two piece gown using a block modified for stretch fabrics.	CO1, CO2, CO4
LSOs 17.1 Identify the measurements necessary to drape a ladies bodice block with darts for front & back with woven fabric. LSOs.17.2 Using draping techniques construct a ladies bodice block with darts for front & back with woven fabric, on a suitable drape form.	17.	Using a suitable drape form, construct a ladies bodice block with darts for front & back with woven fabric, using draping techniques.	CO5
LSOs 18.1 Identify the measurements necessary to drape a dart less ladies bodice block for front & back with knit fabric. LSOs 18.2 Using draping techniques construct a ladies bodice block without darts for front & back with knit fabric, on a suitable drape form.	18.	Using a suitable drape form, construct a ladies dart less bodice block for front & back with knit fabric, using draping techniques.	CO5
LSOs 19.1 Identify the measurements necessary to drape a ladies skirt block with darts for front & back with woven fabric. LSOs 19.2 Using draping techniques construct a ladies skirt block with darts for front & back with woven fabric, on a suitable drape form.	19.	Using a suitable drape form, construct a ladies skirt block with darts for front & back with woven fabric, using draping techniques.	CO5
LSOs 20.1 Identify the measurements necessary to drape a ladies skirt block without darts for front & back with knit fabric. LSOs 20.2 Using draping techniques construct a ladies skirt block without darts for front & back with knit fabric, on a suitable drape form.	20.	Using a suitable drape form, construct a ladies dart less skirt block for front & back With knit fabric, using draping techniques.	CO5

L) Suggested Term Work and Self-Learning: S2452301 Some sample suggested assignments, micro-projects and other activities are mentioned here for reference.

- a. **Assignments:** Questions/Problems /Exercises to be provided by the course teacher in line with the targeted COs.
- b. **Micro Projects:** A suggestive list of micro-projects is given here. Similar micro-projects that match the COs could be added by the concerned course teacher.
 1. Design and draft a garment with suitable raised collar and sleeve and garment in one.
 2. Design and draft a garment with suitable adaptations of darts in upper garments.
 3. Design and draft a lower garment with suitable adaptations of patterns as per design.
- c. **Other Activities:**
 1. Seminar Topics: Designing drafting and fitting garments to various sizes.
 2. Visits: Visit a Designer wear workshop.
 3. Visit to Garment Manufacturing Unit.
 4. Download videos related to simple pattern adaptations.
 5. Self-learning topics: Construction of various Indian Garments.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and sessional work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	25%	23%	20%	10%	25%	10%	20%
CO-2	20 %	23%	20%	10%	25%	20%	20%
CO-3	15%	20%	20%	25%	25%	20%	20%
CO-4	20%	17%	20%	15%	25%	20%	20%
CO-5	20%	17%	20%	40%	--	30%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

- *: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.
 **: Mentioned under point- (N)
 #: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: The specification table represents the reflection of sample representation of assessment of the cognitive domain of the full course.

Unit Number and Title	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Advanced Pattern Adaptations	8	CO1, CO2	16	5	4	7
Unit- 2.0 Women's Garments	10	CO1, CO2	16	3	8	5
Unit- 3.0 Gent's Garments	10	CO1, CO3	14	4	6	4
Unit- 4.0 Knitwear	10	CO1, CO2, CO4	12	4	4	4
Unit- 5.0 Draping	10	CO5	12	4	4	4
Total	48	-	70	20	26	24

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Carry out Dart Displacements using the slash method (1/4 th Scale) as required.	CO1, CO2	40	40	20
2.	Carry out Basic Skirt Adaptations using 1/4 th Scale as required.	CO1, CO2	40	40	20
3.	Draft Sleeve and Garment in one, through adaptation from basic block for women's garments as required.	CO1, CO2	40	40	20
4.	Construct the Shawl Collar, Convertible collar, Raised neckline and Cowl neckline.	CO1, CO2	40	40	20
5.	Adapt the one dart basic bodice block for women into a straight /A- line Kurta with sleeves and back darts.	CO1, CO2	40	40	20
6.	Construct any one type of Salwar & Churidaar.	CO1, CO2	40	40	20
7.	Draft the Plain, Katori and Princess Choli's.	CO1, CO2	40	40	20
8.	Draft a Ladies Pyjamas with top/Night suit or Nightdress.	CO1, CO2	40	40	20
9.	Construct a fitted two darts Bodice block for women's wear.	CO1, CO2	40	40	20
10.	Draft a Formal Gent's Shirt with full sleeves, Shirt Collar and Cuff based on Standard Measurements.	CO3	40	40	20
11.	Draft a full length Gents Trouser with back bound pocket and side seam pocket based on Standard Measurements.	CO3	40	40	20
12.	Draft a full length Kalidar Kurta for Gents with Gussets and Side pockets using Standard Measurements.	CO3	40	40	20

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
13.	Draft a sleeveless Nehru Jacket with Stand collar, two bound pockets and one welt pocket, using Standard Measurements.	CO3	40	40	20
14.	Adapt the two dart Ladies bodice block suitably for Stretch Fabrics, using Standard Measurements.	CO2, CO4	40	40	20
15.	Using the Stretch Fabric block, draft a tank top, using Standard Measurements.	CO2, CO4	40	40	20
16.	Draft a one piece/two piece gown using a block modified for stretch fabrics.	CO1, CO2, CO4	40	40	20
17.	Using a suitable drape form, construct a ladies bodice block with darts for front & back with woven fabric, using draping techniques.	CO5	40	40	20
18.	Using a suitable drape form, construct a ladies dart less bodice block for front & back with knit fabric, using draping techniques.	CO5	40	40	20
19.	Using a suitable drape form, construct a ladies skirt block with darts for front & back with woven fabric, using draping techniques.	CO5	40	40	20
20.	Using a suitable drape form, construct a ladies dart less skirt block for front & back With knit fabric, using draping techniques.	CO5	40	40	20

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lectures, Tutorials, Case Methods, Group-Discussion, Industrial visits, Industrial Training, Portfolio Based Learning, Role Play, Live Demonstrations in Classrooms, Labs, Field, Information and Communications Technology (ICT) Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Sessions, Video Clippings, Use of Open Educational Resources (OER), MOOCs, etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools, and Software	Broad Specifications	Relevant Experiment/ Practical Number
1.	Measuring Tools & equipment.	Flexi tape, Measuring tape, rulers, L-scale, I/4th scale, Dress forms adjustable for ladies and gents.	1-12
2.	Drafting Equipment & Tracing Tools	Brown papers with grain line, Marking pens & pencils, Tacking pins, Tracing Wheel, Tailors Chalk, Dress maker's carbon Paper, Tracing Paper, French curve, trouser shapers, Large drafting tables.(72"*48"*30"*b*h)	1-12
3.	Cutting Tools	Scissors, Pinking shear, Pattern notcher & Punches. A4 size double sided PVC self healing cutting mat with grid.	1-12

S. No.	Name of Equipment, Tools, and Software	Broad Specifications	Relevant Experiment/ Practical Number
4.	Adjustable Drape Forms 1) Full body form (Women's) 2) Pant form (Women's)	Natural body shape, pin able dress forms with collapsible shoulders, covered with linen/ stretchable fabric, with bump outside seams to enable you to feel them when draping with fabric, easily adjust the height by stepping on a foot pedal, with 4 wheel base, metal cage.	17-20

R) Suggested Learning Resources:**(a) Books:**

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Pattern making for fashion design.	Helen Joseph - Armstrong	5 th edition Pearson Education India ISBN- 13: 978-9332518117 ISBN- 10: 9332518114
2.	Fabric, form and flat pattern cutting	Winifred Aldrich	John Wiley & Sons ISBN- 13: 978-1405136204 ISBN- 10: 1405136200
3.	Dress Pattern Designing (Classic edition)	Natalie Bray,	5 th edition Wiley Blackwell ISBN- 13: 978-0632065011 ISBN- 10: 063206501X
4.	Pattern Drafting for Dress Making	Pamela Stringer	B.T Batsford Ltd. London ISBN- 13: 978-0713469875 ISBN- 10: 0713469870
5.	Pattern Grading for Women's Cloths	Gerry Cooklin	Wiley –Blackwell ISBN- 13: 978-0632022953 ISBN- 10: 0632022957
6.	Metric Pattern Cutting for Women's wear	Winifred Aldrich	6 th Edition Wiley Blackwell ISBN- 13: 978-1444335057 ISBN- 10: 1444335057
7.	Metric Pattern cutting for Menswear	Winifred Aldrich	5 th edition Wiley Blackwell ISBN- 13: 978-1405182935 ISBN- 10: 1405182938
8.	Pattern Cutting for Women's Outerwear	Gerry Cooklin	John Wiley & Sons ISBN- 13: 978-0632037971 ISBN- 10: 0632037970
9.	Pattern Cutting for Lingerie, Beachwear and Leisurewear	Ann Haggard	2 nd edition Wiley Blackwell ISBN- 13: 978-1405118583 ISBN- 10: 1405182938
10.	Pattern Making	Jeanne Powell, Carol Foley	Prentice Hall ISBN- 13: 978-0136542117 ISBN- 10: 0136542115
11.	The Art of Fashion Draping	Connie Amaden- Crawford	4 th edition Bloomsbury Publishing India Pvt. Ltd ISBN- 13: 978-1609012274 ISBN- 10: 1609012275

(b) Open Educational Resources:

1. <https://www.youtube.com/watch?v=fbeTqR5GIU0>
2. <https://www.youtube.com/watch?v=zTSbn608Rcc>
3. <https://www.youtube.com/watch?v=rWYHT6qrGAM>
4. https://www.youtube.com/watch?v=mlC0oUVD_To
5. <https://www.youtube.com/watch?v=sAXkK8IX8Sg>
6. <https://www.youtube.com/watch?v=FkK5bZ63YAO>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

(c) Others:**1. Learning Packages**

- <https://patternlab.london/home/project/pattern-making-adobe-illustrator/>
- <https://www.udemy.com/course/pattern-making-for-fashion-design-beginner-course/>
- <https://www.skillshare.com/en/browse/pattern-making>
- <https://www.etelestia.com/en/pattern-making.aspx>
- <https://www.thecreativecurator.com/pattern-making/>
- <https://apparelpatternmaking.com/pattern-development-2/pattern-instruction/>
- https://www.forgottenbooks.com/en/download_pdf/The_Pattern_Makers_Handybook_A_Practical_on_Patterns_for_Founders_1000021830.pdf
- <https://techpacker.com/blog/design/apparel-pattern-making/>
- <https://fairfitstudio.com/blog/patternmaking-101-how-do-i-start-making-my-own-patterns>

- A) **Course Code** : 2452302(T2452302/P2452302/S2452302)
- B) **Course Title** : Garment Manufacturing Process
- C) **Pre-requisite Course(s)** :
- D) **Rationale** :

Development of garment components is the first step towards entire garment manufacturing. The student should be able to develop modified garment components from the basic by following relevant process. Skills in garment component manufacturing are to be developed in students through this course. Modification in garment components play vital role in terms of value addition in fashion industry. Student should be able to apply the knowledge of modification and manufacturing of different garment components.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/laboratory/workshop/field/ industry.

After completion of the course, the students will be able to-

- CO-1** Construct different seam and stitch types.
- CO-2** Develop different modified plackets, pockets and cuff.
- CO-3** Construct garment component by applying principle of fullness.
- CO-4** Develop different classes of collars, necklines and sleeves.
- CO-5** Use different garment finishing and enclosure techniques in specific situations.

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	-	-	2	-	-	2		
CO-2	3	2	3	2	-	-	-		
CO-3	3	2	3	2	3	-	-		
CO-4	3	2	3	2	-	-	-		
CO-5	3	-	-	3	-	3	2		

Legend: High (3), Medium (2), Low (1), and No mapping (-)

* PSOs will be developed by respective program coordinators at the institute level. As per the latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
Garment Technology	2452302	Garment Manufacturing Process	03	-	04	02	09	06

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = $(1 \times \text{CI hours}) + (0.5 \times \text{LI hours}) + (0.5 \times \text{Notional hours})$

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
Garment Technology	2452302	Garment Manufacturing Process	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in the classroom (includes class test, mid-term test, and quiz using online/offline modes) PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro-projects, industrial visits, self-learning, any other student activities, etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignments, micro-projects, seminars, and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria for internal as well as external assessment may vary as per the requirement of the respective course. For valid and reliable assessment, the internal faculty should prepare checklists & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2452302**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Select relevant sewing thread for the given fabric type with justification. <i>TSO 1b.</i> Select relevant seam type for the given garment with justification. <i>TSO 1c.</i> Select relevant stitch type for the given garment with justification. <i>TSO 1d.</i> Simplify the problems in stitching related to the given type of sewing thread.	Unit-1.0 Sewing Thread-Seams and Stitches 1.1 Sewing Thread:- Types, construction, sewing thread quality, selection of sewing thread. Ticket number, packages. 1.2 Seams:- Types of seams, seam quality parameters, factors for seam selection, seam finishes. 1.3 Stitches:- Stitch classes, subclasses, stitch quality parameters, factors for selection of stitches.. 1.4 Defects related to sewing threads and remedial measures.	CO1
<i>TSO 2a.</i> Describe with sketches the given types of placket with sketches. <i>TSO 2b.</i> Describe with sketches the given type of pocket. <i>TSO 2c.</i> Describe with sketches the given method of stitch and attach cuffs to sleeve.	Unit-2.0 Placket, Pocket and Cuff 2.1 Plackets:- Types- regular, top stitched, edge stitched, concealed placket, kurta placket, faced placket continuous bound, diamond plackets, zipper placket. 2.2 Pockets:- Types of pockets- patch pocket, with lining and flap, front hip, side seam pocket, slash pocket with flap, single lip, double lip., 2.3 Cuff:- Making and attaching procedure.	CO1, CO2
<i>TSO 3a.</i> Identify the given yoke type with justification. <i>TSO 3b.</i> Describe with sketches the method of construction of different given darts. <i>TSO 3c.</i> Describe with sketches the procedure to construct tucks suiting to the given garment. <i>TSO 3d.</i> Describe with sketches the procedure to construct pleats, gathers for adding fullness into the given garment.	Unit-3.0 Fullness in Garment 3.1 Yokes: Different styles of yoke-simple yoke, yoke with or without fullness, midriff yokes, methods of attaching yokes. 3.2 Darts: Single, double pointed darts. 3.3 Tucks: Pin tucks, cross tuck, piped tuck, shell tucks, Comparison. 3.4 Pleats: Knife pleats, box pleats, inverted box pleats, accordion pleats kick pleats, Flare godets, gathers, shirrings, frills and ruffles. Comparison, Method of attachment for each.	CO3
<i>TSO 4a.</i> Describe with sketches the method of construction of suitable collar for the given garment. <i>TSO 4b.</i> Describe with sketches the method of	Unit-4.0 Collar, Neckline and Sleeve 4.1 Collars: Classification, full roll, flat, partial roll, convertible and non-convertible, shirt collar, sailor collar, peter pan collar, scalloped collar,	CO4

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
development of suitable neckline for the given garment. <i>TSO 4c.</i> Describe with sketches the method of modifying the specified design of basic sleeve. <i>TSO 4d.</i> Describe with sketches the given method of construction of relevant sleeves.	mandarin, shawl reverse, notch collar. Method of construction of various collars. 4.2 Neckline: Types of necklines 4.3 Sleeves: Types of sleeves, plain, puff or gathered, bell, Raglan, bishop, leg-o-mutton, Magyar, dolman, kimono 4.4 Method of construction of various sleeves	
<i>TSO 5a.</i> Describe with sketches the given method of construction of suitable waistband for the given garment. <i>TSO 5b.</i> Differentiate between the given type of hemming techniques. <i>TSO 5c.</i> Select suitable garment closure technique for the given situation with justification. <i>TSO 5d.</i> Describe with sketches the method of construction of suitable closure technique for the given situation.	Unit-5.0 Waistband, Hemming and Garment Enclosure Techniques 5.1 Waist Band: Types-one piece, two piece, elastic waist band, construction procedure. 5.2 Hemming Techniques: Definition, Selection of hem type, hemming techniques, machines for hemming. 5.3 Garment closure techniques: application of zipper, Velcro, button-hole and button, hook and eye. 5.4 Procedure of closure.	CO5

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452302

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Prepare different stitches and seam types.	1.	Develop different stitches and seam types.	CO1
<i>LSO 2.1.</i> Prepare different types of plackets. <i>LSO 2.2.</i> Prepare different types of pockets. <i>LSO 2.3.</i> Prepare cuff and attach with the sleeve.	2.	Develop different plackets, pockets and cuff. e.	CO2
<i>LSO 3.1.</i> Use of dart. <i>LSO 3.2.</i> Prepare different types of tucks. <i>LSO 3.3.</i> Prepare different types of pleats.	3.	Stitch single and double dart, tucks, and pleats.	CO3
<i>LSO 4.1.</i> Prepare different types of collars. <i>LSO 4.2.</i> Prepare and finish different types of necklines. <i>LSO 4.3.</i> Prepare different types of sleeves.	4.	Develop different collars, and finish different necklines.	CO4
<i>LSO 5.1.</i> Use and attach zipper as garment closure.	5.	Attach zipper as garment closure.	CO2, CO3, CO4, CO5

L) Suggested Term Work and Self Learning: S2452302 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

- a. Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

b. Micro Projects:

1. **Classification of collars and sleeves:** Each student of the batch will classify the garment components based on different styles of collars and sleeves.
2. **Market Survey** (Survey of different markets for various styles of garment components): Each student of a batch will select one garment component and classify garments for the same.
3. **Picture collection:** Collect pictures of various modified garment components.
4. **Picture Classification:** Classify the garments according to component styles.

c. Other Activities:

1. Seminar Topics:
2. Visits:
 - Students should visit the retail outlets where they will be familiar with various new styles in different garment components.
 - Students will visit a garment manufacturing unit to understand about the production process of different garment components.
3. Self-learning topics: New technology in Sewing Thread-Seams, Stitches, Waistband, Hemming and Garment enclosure techniques.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	17%	15%	-	-	20%	20%
CO-2	10%	20%	10%	25%	-	10%	20%
CO-3	15%	26%	15%	25%	33%	15%	20%
CO-4	30%	20%	30%	25%	33%	15%	20%
CO-5	30%	17%	30%	25%	34%	40%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

** : Mentioned under point- (N)

: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Sewing Thread-Seams and Stitches	8	CO1	12	4	2	6
Unit-2.0 Placket, Pocket and Cuff	10	CO1, CO2	14	4	4	6
Unit-3.0 Fullness in garment	10	CO3, CO4	18	4	6	8
Unit-4.0 Collar, Neckline and sleeve	10	CO3, CO4	14	4	4	6
Unit-5.0 Waistband, Hemming and Garment enclosure techniques	10	CO4, CO5	12	4	4	4
Total	48	-	70	20	20	30

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Develop different stitches and seam types.	CO1	40	40	20
2.	Develop different plackets.	CO2	40	40	20
3.	Develop different pockets.	CO2	40	40	20
4.	Develop cuff and attach to the sleeve.	CO2	40	40	20
5.	Stitch single and double dart.	CO3	40	40	20
6.	Develop different tucks.	CO3	40	40	20
7.	Develop different pleats.	CO3	40	40	20
8.	Develop different collars.	CO4	40	40	20
9.	Develop and finish different necklines.	CO4	40	40	20
10.	Develop different sleeves.	CO4	40	40	20
11.	Attach zipper as garment closure.	CO5	40	40	20

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	Single needle lockstitch machine, cotton fabric, sewing thread:	Standard dimensions	All
2.	Scissors	Standard dimensions	All
3.	Measure tape, marking chalk, tracing wheel, ruler	Standard dimensions	All
4.	Drafted patterns	Standard dimensions	All
5.	Fusible interlinings	Standard dimensions	4
6.	Zipper	Standard dimensions	5

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Garment Technology for fashion designers	Cooklin Gerry	Black well science Ltd., 1997, England, ISBN No. 978-1-4051-9974-2.208
2.	Sewing for Apparel Industry	Shaeffer Claire	Pearson Publications, 2000, ISBN No. 13: 978-0131884434
3.	Step by step dress making course	Aitken Leila	BBC Books, 1992, England ISBN No. 9781409352617
4.	The Technology of clothing Manufacture	Barbara Latham Carr Herald	Om Book Service, Eng, 1994 ISBN No. 978-1-4051-6198-5.344

(b) Online Educational Resources:

1. www.pinterest.com/pin/471892867180608344/
2. www.fashiondesignscope.com/?p=3094
3. www.charlesparsons.com/categories/componentry/textilefashionindustry.com
4. books.google.co.in/books?id=jGWWIVedQTQC&pg=PA139&lpg=PA139&dq=garment+components&source

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational recourses before use by the students

- A) **Course Code** : 2452303(T2452303/P2452303/S2452303)
- B) **Course Title** : Textiles and Fashion Design
- C) **Pre-requisite Course(s)** :
- D) **Rationale** :

Textile and fashion designers should have thorough knowledge about elements and principles of designing. That includes repetition, alternation, harmony, gradation, balance, etc. Fashion is a natural instinct in people. The field of fabric decoration, now commonly called surface design, has seen great deal of growth and development. Interaction of design professional at national and international level requires thorough knowledge. The aspects of design affect differently to human beings of different age groups. The students of diploma course should develop very good skill related to textile and fashion design.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Apply elements of Textile in garment design.
- CO-2** Apply elements of fashion in garment design.
- CO-3** Interpret psychology of clothing for selecting the wardrobes.
- CO-4** Use different principles of design for creating different designs of garments.
- CO-5** Compose various traditional and innovative textile designs for different categories of garment.
- CO-6** Use relevant colour theories and harmonies for developing textile and fashion designs.

F) **Suggested Course Articulation Matrix (CAM):**

Course Outcome (COs)	Programme Outcomes (Pos)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	-	3	2	-	-	2		
CO-2	3	2	-	2	-	-	-		
CO-3	3	3	-	2	3	-	-		
CO-4	3	3	-	2	-	-	-		
CO-5	3	-	3	3	-	3	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
Garment Technology	2452303	Textiles and Fashion Design	03	-	04	02	09	06

Legend:

- CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)
- LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
- Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.
- TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)
- SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.
- C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
Garment Technology	2452303	Textiles and Fashion Design	30	70	20	30	20	30	200

Legend:

- PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)
- PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)
- TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

- Note:**
- ETA & ELA are to be carried out at the end of the term/ semester
 - Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done internally (40%) as well as externally (60%). Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2452303**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO1a.</i> Define Textile Design. <i>TSO1b.</i> Explain role of Textile Designer and Fashion Designer. <i>TSO1c.</i> Explain different types of Textiles. <i>TSO1d.</i> Define fashion. <i>TSO1e.</i> Explain principles of fashion. <i>TSO1f.</i> Differentiate between fashion, style and trend. <i>TSO1g.</i> Difference between textile design and Fashion design.	Unit-1.0 Introduction to Textile and Fashion Design 1.1 An Overview of Textiles: History of Textiles, Textile Industry, Textile Material and Process, Textile Design and Designer. 1.2 The overview about textile design as a field. 1.3 Textile Design and Designer, Role of Textile Designer. 1.4 Introduction to Types of Textiles: Woven Textiles, Printed Textiles, Resist Dyed Textiles, Surface embellished Textiles, Non-woven Textiles, Knits and Technical Textiles. 1.5 Introduction to Fashion concept, Definition of fashion. 1.6 Introduction to fashion technology, objectives of fashion technology. 1.6 Difference between style, fashion and trend. 1.7 Fashion Design and Fashion designer, Role of Fashion designer. 1.8 Difference between textile design and Fashion design.	CO1
<i>TSO2a.</i> Explain principles of fashion. <i>TSO2b.</i> Explain Veblen's theory of leisure class. <i>TSO2c.</i> Interpret various fashion terminologies. <i>TSO2d.</i> Identify fashion adoption theories. <i>TSO2e.</i> Explain fashion cycle/ bell curve. <i>TSO2f.</i> Assume reasons for changes in fashion cycle. <i>TSO2g.</i> Analyze lengths and breaks in fashion cycle. <i>TSO2h.</i> List factors affecting fashion. <i>TSO2i.</i> Differentiate accelerating and retarding factors of fashion movements. <i>TSO2j.</i> Explain accelerating factors of fashion movements. <i>TSO2k.</i> Explain retarding factors of fashion movement. <i>TSO2l.</i> Analyze the given situation for identification of factors affecting fashion	Unit-2.0 Fundamentals of Fashion 2.1 Principles of fashion 2.2 The intangible of fashion. 2.3 Veblen's theory of leisure class 2.4 Life cycle of fashion, The bell curve 2.5 Trends in fashion, Fads and classic 2.6 Fashion theories: trickle up, trickle down and trickle across. Comparison of fashion theories. 2.7 Fashion terminology: Haute couture, prêt-à-porter, high fashion, diffusion line, bridge fashion, mass manufactured, boutique, etc. 2.11 Factors Affecting Fashion: The factor of age and gender; geography, culture, economy and class, technology, 'icon', popularity (fashion leaders and fashion followers), taste, Time period. 2.8 Terminologies associated with clothing: Terms for clothing details, Terms for clothing articles, Terms for materials and techniques associated with clothing. 2.12 Psychology of Clothing: First impression; Role of social, psychological and economical aspects of clothing; Origin of fashion and fashion propagation.	CO2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO3a.</i> Use appropriate elements of fashion for making garment. <i>TSO3b.</i> Choose appropriate fabric in given situation. <i>TSO3c.</i> Suggest colour and its effects. <i>TSO3d.</i> Explain importance of fitness in garment. <i>TSO3e.</i> Analyze fabric fall. <i>TSO3f.</i> Distinguish between shape and proportion. <i>TSO3g.</i> Explain various components of Textile Design. <i>TSO3h.</i> Differentiate design for various types of textiles. <i>TSO3i.</i> Use different design for various types of textiles.	Unit-3.0 Design Elements and Principles 3.1 Elements of Textiles: Textile fibre, yarn, fabric and colour. 3.2 Elements of Fashion: Fabric: fabric quality, weave, texture, ornamentation etc. ; Colour, Fit, Fall, Shapes and Proportions 3.3 The Elements of Textile and Fashion Design: Line, Shape (Silhouette), Form, Space, Texture, Colour. 3.4 Principles of Design: Balance, Movement, Repetition, Emphasis, Contrast, Unity. 3.5 Components of Textile Design: 3.5.1 Motif and form development 3.5.2 Pattern and Basic Repeat: Straight Repeat, Half Drop Repeat (Vertical), Brick Repeat (Horizontal), Mirror Repeat (Vertical & Horizontal), Repeat Rotate (Clockwise and Anti-Clockwise), All over repeating design. 3.5.3 Design Layouts and Placements. 3.5.4 Colourways. 3.5.5 Inspiration for Design: Nature, Man-made Objects, Combinations, Designs by Other Designers 3.6 Design for Various Types of Textiles: 3.6.1 Design for Woven Textile: Woven Fabrics, Types of Woven Fabrics (Handloom fabrics, Dobby fabrics, Jacquard fabrics, Pile fabrics (Terry towel), Narrow width fabrics. 3.6.2 Introduction to Knitting 3.6.3 Design for Printed Textile: Methods of Printing, Chemicals and Technologies used in Printing, Print Design Terminology 3.6.4 Design by Dyeing Textile: Resisting the yarns (Ikat) , Tie and dye (Bandhni), Wax resist (Batik), Resist through folding and stitching (Shibori), Resist through clamping technique (Jiaxie) 3.6.5 Surface Ornamentation and Embellishments: Embroidery, Appliqué, Patch work, Fabric gathering, Smocking, Fabric folding, Pleating and Tucks, Thread Pulling techniques.	CO3
<i>TSO4a.</i> List apparel categories. <i>TSO4b.</i> Categorize clothing / fashion on the basis of given criteria. <i>TSO4c.</i> Distinguish various apparel categories. <i>TSO4d.</i> Suggest the category of apparel for any given situation.	Unit-4.0 Apparel Categorization and Terminologies 5. Apparel Categorization: Street wear, Formal wear (business formals), Business casuals, Ethnic wear, Bridal wear (Western, Indian), Kids wear, Denim wear, Lounge wear, Resort wear, Beach wear, Sports wear, Active sports wear. 3.1. Apparel categories of Men's wear: shirts, polos, t-shirts, tanks, jeans, pants, joggers, shorts, bell-bottom, sweatshirts, hoodies. 3.2. Apparel categories of Women's wear: Blouses, coats, jackets, Kurti, hatler top, tank top, tunics, crop tops, leggings, jeans, shorts, capris, trousers, palazzos, salwar, herum, gaggies, hipster, circular skirt, wrap around skirts, gored skirt, trumpet, jumpsuit, evening gowns. 3.3. Apparel categories of Kids wear: Romper, dungarees, sleep suit, pinafore.	CO4

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	3.4. Apparel categories of Inner wear: Lingerie.	
TSO5a. Identify source and creator of fashion. TSO5b. Identify Fashion Icons, Fashion Designers and Fashion Brands. TSO5c. Explain fashion research. TSO5d. Use basic steps of Fashion designing.	Unit-5.0 Designing a Garment 5.1 Sources and Creator of Fashion 5.2 Fashion Icons, Fashion Designers & Fashion Brands 5.3 Fashion Research: Design brief analysis, Key words analysis and mind mapping, Consumer research and boards (psychographic and demographic), Concept boards, Brand research boards. 5.4 The Design Process: Basic Steps of Fashion Designing: Research inspiration, Creative process: Idea sketch, Design development, Production sketch drawing and Presentation drawing, Production of prototype, Evaluation of collection, and Promotion.	CO3, CO4
TSO6a. Explain Light theory of colour. TSO6b. Draw chromatic circle. TSO6c. Explain Pigment theory of colour. TSO6d. Create colour wheel. TSO6e. Apply various colour schemes. TSO6f. Develop Tints, Shades and tones. TSO6g. Identify warm and cool colours. TSO6h. Make colour modification. TSO6i. Use colour harmony. TSO6j. Develop drawings and sketches using appropriate elements of design.	Unit-6.0 Colour Theories and Harmonies 6.1 Light theory of colour – chromatic circle, colour vision. 6.2 Pigment theory of colour – colour wheel, attributes of primary and secondary colours. 6.3 Colour modification – concept, need and requirements. 6.4 Colour harmony – achromatic, monochromatic, analogous, complementary, polychromatic. 6.5 Effect of textile substrate on appearance of colour and simple colour and weave effects.	CO5

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452303

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
1. Identify the different types of Textiles	1	Different types of Textiles. *	CO1
2. Develop the natural, decorative, geometrical and abstract motifs.	2	Natural, decorative, geometrical and abstract motifs. *	CO1, CO2, CO3
3. Develop striped shirting design for office wear with achromatic colour harmony.	3	Striped shirting design for office wear with achromatic colour harmony. *	CO1, CO2, CO3, CO4, CO5
4. Develop checks shirting design for casual wear with monochromatic colour harmony.	4	Checks shirting design for casual wear with monochromatic colour harmony.	CO1, CO2, CO3, CO4, CO5
5. Modify the given colour on paper based on standard colour modification chart.	5	Standard colour modification chart. *	CO5
6. Develop curtain material design with analogous colour harmony.	6	Analogous colour harmony.	CO3, CO4, CO5
7. Develop ladies dress material design with complementary colour harmony.	7	Complementary colour harmony.	CO1, CO2, CO3, CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
8. Develop paper, kids wear design with polychromatic colour harmony.	8	Polychromatic colour harmony.	CO1, CO2, CO3, CO4, CO5
9. Develop the chart for light theory of colour.	9	Light theory of colour.	CO5
10. Develop the chart for pigment theory of colour.	10	Pigment theory of colour.	CO5
11. Develop tints, tones and shades of any three colours.	11	Tints, tones and shades.	CO5
12. Develop standard colour wheel.	12	Standard colour wheel.	CO5
13. Compose all over textile design with diamond or ogee base.	13	All over textile design with diamond or ogee base. *	CO3
14. Compose all over textile design with sateen or half drop base.	14	All over textile design with sateen or half drop base.	CO3
15. Develop Indian traditional motif.	15	Indian traditional motif. *	CO3
16. Develop school uniform for kids using pleats.	16	School uniform for kids using pleats. *	CO1, CO2, CO3, CO4, CO5
17. Develop party wear for teenager using decorative motif. (* are compulsory)	17	Decorative motif.	CO1, CO2, CO3, CO4, CO5

L) Suggested Term Work and Self Learning: P2452303 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. Assignments: Questions/ Problems/ Numerical/ Exercises to be provided by the course teacher in line with the targeted COs.

Suggested Student Activities

- (i) Students will maintain a learning diary.
- (ii) Students will prepare presentation boards/charts.
- (iii) Student will collect photographs from internet which is related to the field.
- (iv) Visit fashion week/fashion shows being arranged in the town/online.
- (v) Collect different fashion sketches and identify thy types of line and their characteristics from these fashion sketches.
- (vi) Identify and compare different principles of designs from different garments.
- (vii) Boutique survey for current fashion trends.
- (viii) Conduct a survey of people belonging to different professions to know the psychology of individual about clothing.
- (ix) Student should maintain a notebook where all the new words which are used in the fashion market will be noted with meanings.
- (x) Students should visit the clothing market where he will be familiar with various new trends in the market.
- (xi) Student will visit a garment manufacturing unit to understand about the production process sequence.

b. Micro Projects:

1. Each batch collect different types of textiles and identify them.
2. Classification of garments: Each student of the batch will classify the garment based on different looks such as surfer look, masculine look, feminine, mod look.
3. Psychology of clothing: Each student will conduct survey of mixed group of population of about twenty persons to find out their criteria of selection of purchasing of specific garment such as regular wear, season specific wear or party wear. The students should develop a questionnaire for this purpose.
4. Elements of fashion design: Students will select fifty different garments from website or photographs from market and classify design as structural and decorative.
5. Observe and analyze any selected area and identify the elements of design (point, line, shape and texture) present in it.
6. Each batch will develop the decorative motifs using different line characteristics.
7. Elements of textile design: Each batch will develop the designs using combination of elements of art.
8. Traditional textile design: Each batch of students will collect 10 pictures for given base of textile design.
9. Picture Classification: Classify the garments according to wears such as formal wear, party wear, etc, from image collected by students themselves.
10. Fashion in Movies/Sports/Media – Case Study.
11. Draw garment designs as per apparel categorization as mentioned in unit no. 4.
12. Report on fashion changes during past 3 decades. Students will include following contents – Political influence – Social influence – Environmental influence – Geographical influence – Cultural influence
13. Market Survey: Survey of different types of markets using various style-lines: Each student of a batch will select one style-line and classify garment types for the same.
14. Fashion Analysis: Discover the movement of fashion for given style-line: Each batch will choose one style-line and students will discover the movement of fashion.
15. A study on fashion of any specific era.
16. Draw different types of silhouettes and garments showing various silhouettes
17. Manufacturing Analysis: Identify the process sequence for given garment. The teacher will assign one garment and the students will identify the process sequence in manufacturing.
18. **Sustainable environment:** Draw garment design for providing message about Sustainable environment / green technology.
19. Colour theories: Students will select fifty different garments and identify the colour harmony.
20. Select a colourful picture from a magazine and find out the colour scheme present in it.

c. Other Activities:

1. Seminar Topics:
 - Prepare power point presentation for showing different types of traditional textile designs.
 - Design for Printed Textiles.
 - Embroidery.
 - Colour theories.

2. Visits: Visit nearby garment industry and Prepare report of visit.

3. Self-learning topics:

- Design for Woven Textiles.
- All over repeating design on Ogee, diamond and sateen bases.
- Fashion Icons, Fashion Designers & Fashion Brands.
- Colour modification.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use the appropriate assessment strategy and its weightage in theory, laboratory and sessional work for ensuring CO attainment. The response/performance of the student in each of these designed activities is to be used to calculate **CO attainment**.

Cos	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self-Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	14%	15%	-	-	20%	10%
CO-2	10%	22%	10%	20%	-	10%	10%
CO-3	15%	22%	15%	20%	25%	15%	20%
CO-4	20%	14%	20%	20%	25%	15%	20%
CO-5	20%	14%	20%	20%	25%	20%	20%
CO-6	20%	14%	20%	20%	25%	20%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

** : Mentioned under point- (N)

: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number (s)	Total Marks	ETA(Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Introduction to Textile and Fashion Design	08	CO1	10	3	3	4
Unit-2.0 Fundamentals of Fashion	10	CO1, CO2	15	4	7	4
Unit-3.0 Design Elements and Principles	10	CO3	15	4	7	4
Unit-4.0 Apparel Categorization and Terminologies	08	CO4	10	3	5	2
Unit-5.0 Designing a Garment	06	CO3, CO4	10	3	5	2
Unit-6.0 Colour Theories and Harmonies	06	CO5	10	3	3	4
Total	48	-	70	20	30	20

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant Cos Number (s)	PLA/ELA		
			Performance		Viva- Voce (%)
			PRA* (%)	PDA** (%)	
1.	Identify the different types of Textiles. *	CO1	30	60	10
2.	Develop on paper, the natural, decorative, geometrical and abstract motifs. *	CO1, CO2, CO3	40	50	10
3.	Develop on paper, striped shirting design for office wear with achromatic colour harmony. *	CO1, CO2, CO3, CO4, CO5	30	60	10
4.	Develop on paper, checks shirting design for casual wear with monochromatic colour harmony.	CO1, CO2, CO3, CO4, CO5	30	60	10
5.	Modify on paper, the given colour on paper based on standard colour modification chart. *	CO5	30	60	10
6.	Develop on paper, curtain material design with analogous colour harmony.	CO3, CO4, CO5	30	60	10
7.	Develop on paper, ladies dress material design with complementary colour harmony.	CO1, CO2, CO3, CO4, CO5	30	60	10
8.	Develop on paper, kids wear design with polychromatic colour harmony.	CO1, CO2, CO3, CO4, CO5	40	50	10
9.	Develop on paper, the chart for light theory of colour.	CO5	40	50	10
10.	Develop on paper, the chart for pigment theory of colour.	CO5	40	50	10
11.	Develop on paper, tints, tones and shades of any three colours.	CO5	30	60	10
12.	Develop on paper, standard colour wheel.	CO5	30	60	10

S. No.	Laboratory Practical Titles	Relevant Cos Number (s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
13.	Compose all over textile design with diamond or ogee base. *	CO3	30	60	10
14.	Compose all over textile design with sateen or half drop base.	CO3	40	50	10
15.	Develop on paper, Indian traditional motif. *	CO3	40	50	10
16.	Develop school uniform for kids using pleats. *	CO1, CO2, CO3, CO4, CO5	40	50	10
17.	Develop on paper, party wear for teenager using decorative motif.	CO1, CO2, CO3, CO4, CO5	30	60	10

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	Pencil	HB	All
2.	Tracing paper	Gateway quality	All
3.	Drawing sheet	A4 size	All
4.	Poster colours		All
5.	Colouring brush	Round (0, 2, 4), Flat (1/2 ")	All
6.	Bow pen		All
7.	Bow compass		All

R) Suggested Learning Resources:**(a) Books:**

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Inside the fashion business	Dickerson Kitty G.	Person Education Pvt. Ltd. Singapore. 2004
2.	Elements of fashion and design	Gertrud Lehnert	West Duxbury Manchesters. 1995
3.	Watson's Textile Design and Colour	Grosicki Z	Universal Publishing Corporation, London. ISBN 9781855739956
4.	History of Textile Design	Shenai V A	Sevak Publication, Mumbai, 1977
5.	Instruction Package on Application of Art and Design to Textile	Sadhale C R	Private circulation TTTI, Bhopal and DKTE Ichalkaranji
6.	Traditional Indian Costume and Textile	Dr. Parul Bhatnagar	Abhishek publication, Chandigarh
7.	Fashion and Its Social Agendas: Class, Gender, and Identity in Clothing	Diana Crane	University Of Chicago Press 2001
8.	Fashion Cultures: Theories, Explorations and Analysis	Stella Bruzzi, Pamela Church Gibson	Routledge; New edition 2001

(b) Online Educational Resources:

1. <http://www.onlineclothingstudy.com>
2. <http://www.wikipedia.com>
3. <http://www.fibrertofashion.com>
4. <http://www.youtube.com>
5. <http://www.myntra.com>
6. <http://www.yepme.com>
7. <http://www.purushu.com/2010/08/elements-of-design-in-fashion.html>
8. <https://www.proprofs.com/quiz-school/story.php?title=elements-principles-design-1>
9. <https://archive.org/details/artineverydaylif008800mbp>
10. <http://williamson.agrilife.org/files/2014/09/principleselements.pdf>
11. <https://ncert.nic.in/textbook/pdf/lehe201.pdf>
12. [https://www.subhartidde.com/slms/BFA\(F\)%20104%20SE%201%20Principles%20of%20Design.pdf](https://www.subhartidde.com/slms/BFA(F)%20104%20SE%201%20Principles%20of%20Design.pdf)
13. <https://www.khanacademy.org/humanities/ap-art-history/start-here-apah#elements-of-art-apah>
14. <http://www.invisionapp.com/design-defined/principles-of-design/>
15. <http://www.sewguide.com/dress-for-bodyshape/?amp=1>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

(c) Others:

1. Lab Manuals

- A) **Course Code** : 2452307(P2452307/S2452307)
- B) **Course Title** : Computer Graphics for Garment Manufacturing
- C) **Pre-requisite Course(s)** : Fundamental of IT System
- D) **Rationale** :

Computers are omnipresent in today's environment, in every field & they are making life a lot more easier & work faster. By applying computer graphics in Garment manufacturing, one could produce faster, develop better designs, simulate a process before actually implementing to evaluate the efficiency & increase the variety of choices & possibilities in every sphere of garment manufacturing from design to dispatch to documentation. The course will enable students to work in today's competitive world & have an edge over competitors.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Choose the right software from the available ones to suit the Garment Industry requirements.
- CO-2** Illustrate garments & garment parts with color & texture options in a short while.
- CO-3** Prepare Documents, Stationery & Charts for Businesses.
- CO-4** Apply the right techniques to Import & Export files, send mails, save large files.
- CO-5** Develop computer generated stationery & Presentations.

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes(POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	2	3	2	1	-	2		
CO-2	3	2	3	2	1	-	2		
CO-3	2	3	1	2	1	1	3		
CO-4	-	-	-	2	2	-	3		
CO-5	2	2	3	3	1	3	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

*PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
GT	2452307	Computer Graphics for Garment Manufacturing	-	-	04	02	06	03

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
Garment Technology	2452307	Computer Graphics for Garment Manufacturing	-	-	20	30	20	30	100

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units:**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	Unit 1 Introduction to Computer Graphic Software & Data in Apparel Industry 1.1 Understanding what is Computer graphic 1.2 The seven basic elements of graphic design are line, shape, color, texture, type, space and image. 1.3 Configuration of a graphic system. 1.4 Functions of a graphic package. 1.5 Features and limitations of software available for designing such as MS Paint, E-draw, Mac Paint, Corel Draw. CAD for drafting and designing. Optitex 3D virtual photo typing. 2D CAD CAM Pattern & Fashion design, Virtual Fashion. Basic, Blonzewear. 3D Apparel solutions like V- stitches, Reach CAD, SCL. Digital Fashion Pro for fashion illustrations, Digital fashion Pro, Beyond the basics for spec sheets. Denim wash factory for denim Washes. Shoes and accessory design packs for accessory designs. Story board creator. Fashion Business creator for business information & spec sheet. Latest Software developed in last year	CO1
	Unit 2 Illustrating in MS Paint 2.1 Illustrating Printing using various tools and equipment of MS Paint. 2.2 Saving & Printing Paint files 2.3 Illustrating different garments on downloaded fashion croquis of male, female & child- Casual. Formal, Occasional & Sportswear. 2.4 Illustrating different accessories on downloaded fashion croquis. 2.5 Creating Stylized fashion figures.	CO 2
	Unit 3 Formulating Charts in Excel Sheets 3.1 Preparing charts using Excel sheets 3.2 Saving & printing Excel sheets 3.3 Preparing measurement sheet, grading sheets,	CO 3
	Unit 4 Drawing, Texturing, Scanning and Tracing in Corel 4.1 using different tools of Corel. 4.2 Illustrating, Texturing, Scanning & tracing in Corel 4.3 Saving and printing a Corel file 4.4 Importing and Exporting files. 4.5 Importing designs done in MS Paint and texturing them in Corel (different garments on downloaded fashion croquis of male, female & child- Casual. Formal, Occasional &	CO 2, CO 4

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	Sportswear).	
	Unit 5 Presentations & Graphics 5.1 Planning a presentation on power point 5.2 Adding animations in presentation 5.3 Adding videos in presentation 5.4 Making spec sheets, visiting cards, letterheads, story boards, flow charts, etc. using different software.	CO 3, CO 4, CO 5

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452307

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Detect Computer graphic software & data requirements in Apparel Industry. <i>LSO 1.2.</i> Review the available software for their suitability <i>LSO 1.3.</i> Apply the seven basic elements of graphic design - line, shape, color, texture, type, space and image. <i>LSO 1.4.</i> Deduce the Configuration of a graphic system, <i>LSO 1.5.</i> Use the functions of a graphic package	1.	Identify Computer graphic software & data in Apparel Industry.	CO1
<i>LSO 2.1.</i> Identify the tools in paint & their uses. <i>LSO 2.2.</i> Examine the Possibilities & limitations in Paint. <i>LSO 2.3.</i> Compose a scenery with the tools of paint <i>LSO 2.4.</i> Express creativity in design. <i>LSO 2.5.</i> Apply the features of E-draw/ to design. <i>LSO 2.6.</i> Examine the Possibilities & limitations in E draw/ Mac Paint	2.	Analyze the features of MS Paint/ E draw/ Mac Paint for designing.	CO1, CO2
<i>LSO 3.1.</i> Analyze the features of Corel draw. <i>LSO3.2</i> Examine the Possibilities & limitations of Corel Draw. <i>LSO 3.3.</i> Develop a stylized figure in Corel. <i>LSO 3.4</i> Transform a design with the help of nodes <i>LSO 3,5</i> Add or delete nodes as required <i>LSO 3.6.</i> Design clothing & accessories on this stylized figure <i>LSO 3.7</i> Save & print a Corel file.	3.	Illustrate a stylized figure in Corel Draw	CO1, CO 4
<i>LSO 4.1.</i> Examine the features of all the available software for drafting, cutting, designing, stitching, finishing & packing. <i>LSO 4.2</i> Compare Possibilities & limitations of each.	4.	Apply the latest software available in Garment manufacturing	CO1, CO2
<i>LSO 5.1.</i> Illustrate in Paint	5.	Illustrate figures in MS Paint.	CO1, CO 2, CO 4

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 5.2.</i> Design motifs. <i>LSO 5.3.</i> Plan repeats of motifs <i>LSO 5.4.</i> Save & Print Paint files <i>LSO 5.5.</i> Recover a lost file <i>LSO 5.6.</i> Set up of page, margins & print preview			
<i>LSO 6.1.</i> Plan the casual garments for men, women & children <i>LSO 6.2.</i> Download the fashion croquis. <i>LSO 6.3.</i> Illustrate the planned Casual garments on the croquis. <i>LSO 6.4.</i> Illustrate suitable accessories	6.	Illustrate Casual garments on downloaded fashion croquis of male, female & child.	CO 2
<i>LSO 7.1.</i> Plan the formal garments for men, women & children <i>LSO 7.2.</i> Download the fashion croquis. <i>LSO 7.3.</i> Illustrate the planned formal garments on the croquis. <i>LSO 7.4.</i> Illustrate suitable accessories.	7.	Illustrate Formal garments on downloaded fashion croquis of male, female & child.	CO 2
<i>LSO 8.1.</i> Plan the Occasional garments for men, women & children <i>LSO 8.2.</i> Download the fashion croquis. <i>LSO 8.3.</i> Illustrate the planned formal garments on the croquis. <i>LSO 8.4.</i> Illustrate suitable accessories	8.	Illustrate Occasional garments on downloaded fashion croquis of male, female & child.	CO 2
<i>LSO 9.1.</i> Plan the Sportswear for men, women & children <i>LSO 9.2.</i> Download the fashion croquis. <i>LSO 9.3.</i> Illustrate the planned Sportswear on the croquis. <i>LSO 9.4.</i> Illustrate suitable accessories	9.	Illustrate Sportswear garments on downloaded fashion croquis of male, female & child.	CO 2
<i>LSO 10.1.</i> Prepare charts using Excel sheets <i>LSO 10.2.</i> Identify the charts that can be worked faster using excel like measurement sheet & grading sheets. <i>LSO 10.3.</i> Plan the format for the charts <i>LSO 10.4.</i> Formulate the charts <i>LSO 10.5.</i> Save & print Excel sheets	10.	Formulate charts in Excel sheets.	CO1, CO 3, CO4
<i>LSO 11.1.</i> Identify the tools of Corel for illustrations & text <i>LSO 11.2.</i> Use the tools to illustrate figures, motifs, garments & accessories. <i>LSO 11.3.</i> Discover the texturing options in Corel. <i>LSO 11.4.</i> Edit available textures as per suitability <i>LSO 11.5.</i> Create your own textures <i>LSO 11.6.</i> Apply textures on designs	11.	Illustrate in Corel Draw.	CO1, CO 2, CO 4
<i>LSO 12.1</i> Trace any imported images in Corel with Bezier tool <i>LSO 12.2</i> Import a file from any other software to	12.	Trace in Corel Draw.	CO 4

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
Corel LSO 12.3 Export Corel files to other software			
LSO 13.1 Import the casual file from paint to Corel LSO 13.2 Trace the casual garments LSO 13.3 Texture the traced garment LSO 13.4 Save & print the file	13.	Texture in Corel on Casual wear designs done in MS Paint.	CO 4
LSO 14.1 Import the formal file from paint to Corel LSO 14.2 Trace the formal garments LSO 14.3 Use textures on the traced garment LSO 14.4 Save & print the file	14.	Texture in Corel on Formal wear designs done in MS Paint.	CO 4
LSO 15.1 Import the occasional file from paint to Corel LSO 15.2 Trace the occasional garments LSO 15.3 Use textures on the traced garment LSO 15.4 Save & print the file	15	Texture in Corel on Occasional wear designs done in MS Paint..	CO 4
LSO 16.1 Import the sportswear file from paint to Corel LSO 16.2 Trace the sportswear garments LSO 16.3 Use textures on the traced garment LSO 16.4 Save & print the file	16.	Texture in Corel on Casual wear designs done in MS Paint.	CO 4
LSO 17.1 Draft garment patterns with PDS (Pattern Drafting system) LSO 17.2 Generate patterns with PGS (Pattern Generation System) LSO 17.3 Plan Marker with Reach planner or similar software LSO 17.4 Cut with Reach cut planner or similar software	17.	Probe Cutting solutions with latest software	CO1, CO 3
LSO 18.1 Design garments with Reach CAD Fashion Studio or similar software LSO 18.2 Change colors as required LSO 18.3 Apply different textures LSO 18.4 Develop styles with Reach style manager or similar software	18.	Probe Apparel design solutions with latest software	CO1, CO 5
LSO 19.1 Solve Apparel manufacturing problems such as setting up a line in a batch with software LSO 19.2 Eliminate bottlenecks with the help of SCL or similar software	19.	Probe Apparel production solutions with latest software	CO1, CO 3, CO 5
LSO 20.1 Solve Apparel merchandising problems with software such as Reach Merchandising manager, LSO 20.2 Plan production with Reach merchandising manager or similar software LSO 20.3 Organize production with Reach merchandising manager or similar	20.	Probe Merchandising solutions with latest software	CO1, CO 3, CO 5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
software LSO 20.4 Control production with Reach merchandising manager or similar software			
LSO 21.1 Recognize the various washes on Denim fabric & garments LSO 21.2 Distinguish the effects of each wash LSO 21.3 Discover the effects of various denim washes with Denim wash factory or other suitable software	21.	Discover the effects of various denim washes with latest software.	CO1, CO 3, CO 5
LSO 22.1 Identify the types of spec sheets & their requirements LSO 22.2 Develop spec sheets with Digital fashion Pro Beyond the basics or any other suitable software.	22.	Make Spec sheets with various available software	CO1, CO 3, CO 5
LSO 23.1 Inquire the different sizes & shapes of a visiting card LSO 23.2 Choose from different design formats available LSO 23.3 Edit the formats as per requirement LSO 23.4 Create your own visiting card designs	23.	Design visiting cards with various software	CO1, CO 3, CO 5
LSO 24.1 Inquire the different sizes & shapes of a Letterhead LSO 24.2 Choose from different design formats available LSO 24.3 Edit the formats as per requirement LSO 24.4 Create your own letterhead designs	24.	Design letterheads with various software	CO1, CO 3, CO 5
LSO 25.1 Assemble data to create a story/show/event. LSO 25.2 Hypothesize the critical issues LSO 25.3 Simulate a show/ event with Story board creator or any suitable software.	25.	Create story boards with software	CO1, CO 3, CO 5
LSO 26.1 Arrange the flow of events in Chronological order LSO 26.2 Show Arrows for route taken LSO 26.3 Evaluate the time taken LSO 26.4 Develop the chart	26.	Prepare flow charts with latest software	CO1, CO 3, CO 5
LSO 27.1 Plan the different accessories for men, women & children LSO 27.2 Illustrate various garment accessories with Shoes & Accessory Design, Digital fashion Pro, or similar software	27.	Illustrate various accessories with latest software.	CO 1, CO1, CO 4
LSO 28.1 Plan different business strategies LSO 28.2 Analyze each strategy LSO 28.3 Compare effectiveness of each strategy LSO 28.4 Organize the plans LSO 28.5 Formulate a plan with Business Creator or similar software	28.	Develop a Business plan with available software	CO1, CO 3, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 29.1 Probe 3D virtual photo typing Pattern making & grading with Optitex 3d virtual design or other software. LSO 29.2 Appraise the use of 2D CAD CAM Pattern & Fashion design for design development as well as pattern making	29.	Probe 3D virtual photo typing Pattern making & grading.	CO1, CO5
LSO 30.1 Create a 3D virtual design with Optitex 3D virtual photo typing or other suitable software. LSO 30.2 Simulate the effectiveness of a design with 3D virtual design prototyping LSO 30.3 Visualize a 3 D image of design with suitable software	30.	Create a 3D virtual design.	CO1, CO5
LSO 31.1 Plan items for mood board/ theme board LSO 31.2 Inspect the software available for suitability LSO 31.3 Design mood boards/ theme boards	31.	Plan mood board/ theme board with latest software	CO1, CO5
LSO 32.1 Plan a presentation LSO 32.2 Choose the slide design LSO 32.3 Choose fonts for matter LSO 32.4 Choose pictures LSO 32.5 Animate your presentation LSO 32.6 Set time on the presentation LSO32.7 Add pictures in presentation LSO32.8 Dramatize your presentation with video	32.	Plan a presentation on power point	CO1, CO 3, CO 4, CO 5

L) Suggested Term Work and Self Learning: S2452307 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. **Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

b. **Micro Projects:**

1. Assignment to find out the Latest Software developed in last year
2. Creating Stylized fashion figures with garments & accessories.
3. Designing an article as a prop for a fashion show & getting a 3d printout of the same

c. **Other Activities:**

1. Seminar Topics:
 - Commercially available software, prices & features.
 - Adobe Illustrator- uses for graphic designing
2. Visits: Visit nearby tool room/industry with 3D Printing facilities if possible. Prepare report of visit with special comments of 3D printing technique used, material used, single component/batch production/mass production and cost of printed component.
3. Self-learning topics: Designing of a web page

- M) Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	-	-	20%	15%	10%	20%	20%
CO-2	-	-	25%	25%	30%	30%	30%
CO-3	-	-	15%	25%	25%	15%	10%
CO-4	-	-	10%	10%	10%	15%	10%
CO-5	-	-	30%	25%	25%	20%	30%
Total Marks			20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

** : Mentioned under point- (N)

: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

- N) Suggested Specification Table for End Semester Theory Assessment: (Not Applicable)**

- O) Suggested Assessment Table for Laboratory (Practical):**

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva- Voce (%)
			PRA* (%)	PDA** (%)	
1.	Identify Computer graphic software & data in Apparel Industry.	CO1	60	20	20
2.	Analyze the features of MS Paint/ E draw/ Mac Paint for designing.	CO1, CO2	60	30	10
3.	Illustrate a stylized figure in Corel Draw	CO1, CO 4	50	40	10
4.	Apply the latest software available in Garment manufacturing	CO1, CO2	60	30	10
5.	Illustrate figures in MS Paint.	CO1, CO 2, CO 4	60	30	10
6.	Illustrate Casual garments on downloaded fashion croquis of male, female & child.	CO 2	60	30	10
7.	Illustrate Formal garments on downloaded fashion croquis of male, female & child.	CO 2	60	30	10
8.	Illustrate Occasional garments on downloaded fashion croquis of male, female & child.	CO 2	60	30	10
9.	Illustrate Sportswear garments on downloaded fashion croquis of male, female & child.	CO 2	60	30	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
10.	Formulate charts in Excel sheets.	CO1, CO 3, CO4	50	40	10
11.	Illustrate in Corel Draw.	CO1, CO 2, CO 4	50	30	10
12.	Trace in Corel Draw.	CO 4	50	40	10
13.	Texture in Corel on Casual wear designs done in MS Paint.	CO 4	50	40	10
14.	Texture in Corel on Formal wear designs done in MS Paint.	CO 4	40	50	10
15.	Texture in Corel on Occasional wear designs done in MS Paint..	CO 4	60	30	10
16.	Texture in Corel on Casual wear designs done in MS Paint.	CO 4	60	30	10
17.	Probe Cutting solutions with latest software	CO1, CO 3	30	60	10
18.	Probe Apparel design solutions with latest software	CO1, CO 5	40	50	10
19.	Probe Apparel production solutions with latest software	CO1, CO 3, CO 5	50	40	10
20.	Probe Merchandising solutions with latest software	CO1, CO 3, CO 5	40	50	10
21.	Discover the effects of various denim washes with latest software.	CO1, CO 3, CO 5	40	50	10
22.	Make Spec sheets with various available software	CO1, CO 3, CO 5	40	50	10
23.	Design visiting cards with various software	CO1, CO 3, CO 5	30	60	10
24.	Design letterheads with various software	CO1, CO 3, CO 5	20	70	10
25.	Create story boards with software	CO1, CO 3, CO 5	30	60	10
26.	Prepare flow charts with latest software	CO1, CO 3, CO 5	30	60	10
27.	Illustrate various accessories with latest software.	CO 1, CO1, CO 4	30	60	10
28.	Develop a Business plan with available software	CO1, CO 3, CO5	30	60	10
29.	Probe 3D virtual photo typing Pattern making & grading.	CO1, CO5	30	60	10
30.	Create a 3D virtual design.	CO1, CO5	30	60	10
31.	Plan mood board/ theme board with latest software	CO1, CO5	30	60	10
32.	Plan a presentation on power point	CO1, CO 3, CO 4, CO 5	30	60	10

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	High end computers	Processor Intel Core i7 with Open GL Graphics Card, RAM 32 GB, DDR3/DDR4, HDD 500 GB, Graphics Card NVIDIA OpenGL 4 GB, OS Windows 10	All
2.	E-draw	Trail version	2
3.	Corel DRAW	Latest version	3, 11 to 16,
4.	AutoCAD	Latest version	4
5.	Optitex 3D	Trial Version	4
6.	3D virtual design prototyping	Trial Version	4
7.	2D CAD CAM Pattern & Fashion design	Trial Version	4
8.	Virtual Fashion	Trial Version	4
9.	Browzwear.	Trial Version	4
10.	Reach CAD fashion Studio	Trial Version	17
11.	Reach cut Planner	Trial Version	18
12.	Reach Merchandising manager	Trial Version	21
13.	Reach style manager	Trial Version	18
14.	SCL	Trial Version	19
15.	Digital Fashion Pro	Trial Version	18
16.	Digital fashion Pro, Beyond the basics	Trial Version	18
17.	Denim wash factory.	Trial Version	19

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
18.	Shoes and accessory design	Trial Version	27
19.	Story board creator.	Trial Version	25
20.	Fashion Business creator	Trial Version	28
21.	Adobe Illustrator	Trial Version	Home assignment

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Graphic Design For Fashion	Jay Hess	Laurence King, 2011 ISBN: 1780677812, 9781780677811
2.	Fashion Croquis Body templates	Fashion Design Illustrations Co	Fashion Design Illustrations Co ISBN 13: 978-1672835527
3.	A Text Book of Computer Aided Apparel fashion Designing & Production Pattern Making	Meenu Srivastava	Himanshu Publications (1 January 2011) ISBN 10: 8179062511 ISBN 13: 978-8179062517
4.	Getting Started with 3D Printing: A Hands-on Guide to the Hardware, Software, and Services Behind the New Manufacturing Revolution	Liza Wallach Kloski, Nick Kloski	Make Community, LLC; 2nd edition, 2021 ISBN: 9781680450200

(b) Online Educational Resources:

1. <https://fashinza.com/textile/tips-for-fashion-brands/how-to-design-clothes-on-your-computer/>
2. <https://fashion2apparel.com/uses-of-computer-in-creating-design/>
3. <https://www.atlantis-press.com/article/25861160.pdf>
4. <https://textilelearner.net/computer-aided-fashion-designing/>
5. <https://inifdahmedabad.com/blog/importance-of-cad-in-fashion-industry/>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

(c) Others:

1. Graphic Design for Fashion Released October 2010, Publisher(s): Laurence King, ISBN: 9781856696937. Read it now on the O'Reilly learning platform with a 10-day free trial.
2. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=2478>
3. <https://www.atlantis-press.com/article/25861160.pdf>
4. 3D Printer Material Handbook
5. Lab Manuals

- A) **Course Code** : 2400208(P2400208/S2400208)
- B) **Course Title** : Sports, Yoga and Meditation (Common for all Programmes)
- C) **Pre- requisite Course(s)** :
- D) **Rationale**

Sports or Physical Education, Yoga and Meditation is an integral part of a person's overall well-being and is imperative for a healthy mind and body balance. So, it is necessary that every educational institutes should lay ample emphasis on including sports, yoga and meditation as a necessary part of education, however, it depends on how it is introduced in the curriculum makes all the difference. Sports, Yoga and Meditation plays a very important role in overall Well-being for a good personality, develops value system, sense of friendliness, feeling of togetherness thereby developing team spirit and mutual cooperation. Its also plays a major role in reducing level of stress/anxiety and add to the mental toughness. Looking to the ample benefits there is need to inculcate sports, Yoga and meditation as a day to day habit and imparting education related to physical education is more critical than ever before.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

CO-1 Select appropriate physical activities to maintain healthy lifestyle.

CO-2 Apply basic principles and practices of Yoga and meditation for overall growth & development.

CO-3 Use fitness and wellness techniques for optimal health and wellbeing

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Developm entof Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Managem ent	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	3	3	-	1	-	2		
CO-2	3	3	3	-	1	-	2		
CO-3	3	3	3	-	1	-	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2400208	Sports, Yoga and Meditation	-	-	01	01	02	01

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2400208	Sports, Yoga and Meditation	-	-	25	-	10	15	50

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units:**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO.1a</i> Differentiate between given terms used in sports <i>TSO.1b</i> Discuss the different aspects of Mental Toughness <i>TSO.1c</i> Use Imagery Training for sports <i>TSO.1d</i> Apply motivation techniques to motivate students in sports. <i>TSO.1e</i> Use concentration techniques for playing and exercising. <i>TSO.1f</i> Manage Stress, Anxiety and Arousal during sports. <i>TSO.1g</i> Select sports and exercise for healing and developing health and mental wellness <i>TSO.1h</i> Discuss the impact of parents' involvement in their children's sports activities <i>TSO.1i</i> Select sports and exercises for physically challenged as per their need.	Unit-1.0 Sports and Exercises 1.1 Definition of play, game, sports, exercise, psychology, sports psychology and exercise psychology, psychology and common sense. 1.2 Mental toughness- mind, Imagery, use of imagery and imagery in sports, types of imagery (visual, kinesthetic, auditory and olfactory) 1.3 Motivation in sport and goalsetting in sports 1.4 Arousal regulation – self-awareness of regulation, anxiety reduction techniques- somatic anxiety reduction techniques, cognitive Anxiety reduction, multimodal anxiety reduction, coping with stress. Arousal -inducing techniques. Arousal and anxiety measurement factors, Arousal and anxiety signs recognition 1.5 Nutrition and rehabilitation, Importance of concentration and attentional focus in sports and training, Impact of health on healing from physical athletic injuries. Impact of exercise to increase mental wellness, Role of coach in sports, parents' involvement in their children's sports activities. 1.6 Adaptation of sports and exercises for physically challenged students in all levels.	CO1
<i>TSO.2a</i> Identify the physiology of yoga and meditation. <i>TSO.2b</i> Evaluate meditation and yoga as a healing modality. <i>TSO.2c</i> Select asanas and pranayama as per need. <i>TSO.2d</i> Discuss the effect of yoga and meditation on ageing, stress and hypertension. <i>TSO.2e</i> Select mediation techniques as per the need. <i>TSO.2f</i> Discuss Bandha, Mudra and Chakra <i>TSO.2g</i> Discuss the steps of Suryanamaskar. <i>TSO.2h</i> Select Yoga and Meditation for physically challenged as per their need.	Unit-2.0 Yoga and Meditation 2.1 Importance of Yoga & Mediation in daily life, Definition and meaning of the term Yoga and Meditation, Fundamentals Principles of Yoga & Fitness training 2.2 Difference between yoga asana and physical exercises, Difference between yoga and meditation 2.3 Role of Yoga and Meditation in Purificatory Process, in character building, developing concentration, will power and discipline 2.4 Types of Yoga Practices - Asanas, Pranayama, Meditation 2.5 Mindfulness – knowing the mind, training the mind, feeling the mind 2.6 Different Methods of meditation, Physiology of meditation, Mental, physical and emotional benefits of Asanas, Pranayama, Concentration and Meditation 2.7 Bandha, Mudra and Chakra	CO2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	2.8 Effects of Asanas and pranayama on physiology of human body 2.9 Importance of "Suryanamaskar" 2.10 Adaptation of Yoga and meditations for physically challenged students in all levels. 2.11 Yoga Asanas Do's and Don'ts for Beginners	
<i>TSO.3a</i> Identify the different factors affecting the fitness and wellness in the given situation <i>TSO.3b</i> Use different methods to maintain Health and Wellness <i>TSO.3c</i> Discuss the components of Balance Diet <i>TSO.3d</i> Identify the causes of stress and anxiety in the given situation <i>TSO.3e</i> Use stress reduction techniques to manage Stress and Anxiety <i>TSO.3f</i> Manage Stress, Anxiety and Depression in the given situation <i>TSO.3g</i> Select recovery process for energy replenishment after exercise.	Unit 3.0 Fitness and Wellness 3.1 Meaning, Importance, Definition and dimensions of Health and Wellness (WHO/Yoga) 3.2 Factors affecting Fitness and Wellness 3.3 Role of Physical Activities and Recreational Games in maintaining physiological and psychological wellbeing. 3.4 Different Methods to Maintain Health, Wellness and to enhance mood 3.5 Nutrition for Health & Wellness, Relationship between Diet and Fitness Components of Balance Diet and its importance – Carbohydrates, Protein, Fat, Vitamins & Minerals, Water, Healthy Lifestyle through Diet and Fitness 3.6 Anxiety, Stress and Aging-Meaning of Anxiety, Stress and Aging, Types and Causes of Stress, 3.7 Stress, anxiety and depression reduction with exercise, yoga and meditation 3.8 Energy Continuum and Recovery Process, Metabolism and exercise, Recovery from exercise, Replenishment of energy stores during recovery process, Removal of excess lactic acid produced during exercise	CO3

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2400208

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Perform various sports activities for overall growth and development <i>LSO 1.2.</i> Select suitable sport activities as per your need.	1.	Track & Field: Running, Jumping, walking and Throwing, Cycling Event to develop Endurance, Speed, Strength, Agility, Flexibility etc	CO1
	2.	Aerobics and Gymnastics to develop Strength, Agility and Flexibility	
	3.	Net/Wall Sports – Volleyball and Basketball to develop Endurance, Speed, Strength, Agility and Flexibility	
	4.	Striking & Fielding sports like Cricket, bowling, Hockey, Football Baseball etc. to develop Endurance, Speed, Strength, Agility, Flexibility and Coordination	
	5.	Racket Game- Tennis, Badminton, Table tennis etc to develop Endurance, Speed, Strength, Agility and Flexibility	
	6.	Outdoor games: Kho-Kho and Kabaddi and cycling develop Endurance, Speed, Strength, Agility and Flexibility	

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
	7.	Indoor games: Chess and Carrom, Swimming, Boxing, Karate Weightlifting, Power Lifting, Physique Training, Archery, Roller Skating etc to develop concentration.	
	8.	Prepare and organize Adapted Sports for various levels of physically challenged and impairments.	
	9.	Shat Karmas: Tratakam, Jala-Neti, Sutra-Neti, Vamana Dhauti, Danda Dhauti, Agnisara, Nauli	CO2
LSOs 2.1 Perform various yogic techniques for internal purification and development.	10.	Perform following asanas with correct posture: Ardha-Padmasana [virasana], Ardha-Halasana, Pavana-Muktasana, Naukasana, Ardha-shalabhasana, Shalabhasana, Makarasan, Bhujangasana, Dhanurasana	
	11.	Perform following asanas with correct posture: Vakrasana, Chakrasana, Paschimottanasana, Ugrasana, Gomukhasana, Padmasana, Siddhasana, Bhadrasana, Swastikkasana, Vajrasana, Supta-Vajrasana, Yoga-Mudra	
	12.	MUDRAS & SURIYANAMASKAR Brahma-Mudra, Simha-Mudra, Shanmugi Mudra, Viparithakarani-Mudra, Ashwini-Mudra, Suriyanamaskar	
	13.	BANDHAS Jalandhara-Bandha, Jihva-Bandha, Uddiyana Bandha, Moola-Bandha	
	14.	PRANAYAMAS Nadi-Shuddhi, Nadi-Shodhana, Suryabhadana, Ujjayi, Bhastrika Pranayama, Bhramari Pranayama, Sitkari, Sitali, Kapalabhati	
	15.	MEDITATION -Silent Meditation	
	16.	MEDITATION – Mantra Meditation	
LSO 3.1. Prepare diet chart for optimal health and wellbeing	17.	Prepare a diet chart for the given sport.	CO3
LSO 3.2. Use health monitoring device	18.	Measure heart rate and heart function with health monitoring device	
	19.	Measure blood sugar and blood pressure	
LSO 3.3. Use different equipment's	20.	Use massage therapy equipment, Hot and cold therapy equipment, Ultrasound therapy equipment	
LSO 3.4. Identify your own threshold and identification level for different taste Stimulations	21.	Determine the taste threshold for three different sensations- sweet salty and sour	
LSO 3.5. Check the given sample for conformance to the standard for moisture content.	22.	Determine the moisture content in the given sample of oil/fat	
LSO 3.6. Purity tests of oils/fats	23.	Determine the impurities in the given sample of oil.	
LSO 3.7. Acidity test in given sample of fat/oil	24.	Determines the acid value and free fatty acids in the given sample of oil/fat.	
LSO 3.8. Check whether any given samples of oils/fats conform to the standard.	25.	Determine the peroxide value in the given sample of fat or oil.	

- L) Suggested Term Work/ Activities and Self Learning: S2400208** Some sample suggested assignments, micro project and other activities are mentioned here for reference.
- a. Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.
- Calculate your Body Composition (BMI) and Cardiovascular Assessment
 - Assessment for Muscular Endurance, Muscular Strength,
 - Flexibility, Cardio-respiratory Endurance, Body Composition
 - Rules and Regulations of different indoor and outdoor games.
- b. Micro Projects:**
- Identify and synthesize the factors that influence health in various situations (05 situations). Prepare a report with details of situations and solutions to remove the factors.
 - Visit different sports club, gyms, and schools and identify various measure taken by them for Fitness and wellness of students/ members
 - Visit different sports club, gyms, and schools and identify various measure taken by them for Fitness and wellness of physically challenged students/ members
 - Identify which type of stress, anxiety and depression students are facing and steps and solutions to overcome this.
- c. Other Activities:**
1. Seminar Topics:
 - Identify the health-related challenges in current time and able to apply the preventive measures.
 - Role of peers, community and media in health and wellbeing in each level
 - Knowledge and skills required to preserve community health and well-being
 - Effect of yoga and meditation in maintaining fitness.
 - Methods to involve physically challenged students /members in all levels in sports, yoga and meditation in community.
 - Counselling techniques to counsel players in matters of handling success and failure.
 2. Visits: Visit nearby sports complex, Gyms, stadium etc and prepare a report on hygiene maintenance, medical facilities available, facilities available for physically challenged members, facilities available for old aged members, tools and equipment available and training facilities.
 3. Self-learning topics:
 - Anatomy and physiology of human being
 - Role of Yoga and Meditation in Purificatory Process, in character building, developing concentration, will power and discipline
 - Mindfulness
 - Different Methods to Maintain Health, Wellness and to enhance mood
 - Diet and Nutrition
 - Metabolic adaptations to exercise
 - Cardio-respiratory changes

- M) Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	-	-	35%	35%	35%	35%	35%
CO-2	-	-	35%	35%	35%	35%	35%
CO-3	-	-	30%	30%	30%	30%	30%
Total Marks	-	-	10	10	05	10	15
			25				

Legend:

- *: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.
 **: Mentioned under point- (N)
 #: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: (Not Applicable)

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Track & Field: Running, Jumping, walking and Throwing, Cycling Event to develop Endurance, Speed, Strength, Agility, Flexibility etc	CO1	30	60	10
2.	Aerobics and Gymnastics to develop Strength, Agility and Flexibility		30	60	10
3.	Net/Wall Sports – Volleyball and Basketball to develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
4.	Striking & Fielding sports like Cricket, bowling, Hockey, Football Baseball etc. to develop Endurance, Speed, Strength, Agility, Flexibility and Coordination		30	60	10
5.	Racket Game- Tennis, Badminton, Table tennis etc to develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
6.	Outdoor games: Kho-Kho and Kabaddi and cycling develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
7.	Indoor games: Chess and Carrom, Swimming, Boxing, Karate Weightlifting, Power Lifting, Physique Training, Archery, Roller Skating etc to develop concentration.		30	60	10
8.	Prepare and organize Adapted Sports for various levels of physically challenged and impairments.		30	60	10
9.	Shat Karmas	CO2	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
	Tratakam, Jala-Neti, Sutra-Neti, Vamana Dhauti, Danda Dhauti, Agnisara, Nauli				
10.	Perform following asanas with correct posture: Ardha-Padmasana [virasana], Ardha-Halasana, Pavana-Muktasana, Naukasana, Ardha-shalabhasana, Shalabhasana, Makarasan, Bhujangasana, Dhanurasana		40	50	10
11.	Perform following asanas with correct posture: Vakrasana, Chakrasana, Paschimottanasana, Ugrasana, Gomukhasana, Padmasana, Siddhasana, Bhadrasana, Swastikasana, Vajrasana, Supta-Vajrasana, Yoga-Mudra		40	50	10
12.	MUDRAS & SURIYANAMASKAR Brahma-Mudra, Simha-Mudra, Shanmugi Mudra, Viparithakarani-Mudra, Ashwini-Mudra, Suriyanamaskar		40	50	10
13.	BANDHAS Jalandhara-Bandha, Jihva-Bandha, Uddiyana Bandha, Moola-Bandha		40	50	10
14.	PRANAYAMAS Nadi-Shuddhi, Nadi-Shodhana, Suryabhadana, Ujjayi, Bhastrika Pranayama, Bhramari Pranayama, Sitkari, Sitali, Kapalabhati		40	50	10
15.	MEDITATION - Silent Meditation		40	50	10
16.	MEDITATION - Mantra Meditation		40	50	10
17.	Prepare a diet chart for the given sport.	CO3	40	50	10
18.	Measure heart rate and heart function with health monitoring device		40	50	10
19.	Measure blood sugar and blood pressure		40	50	10
20.	Use massage therapy equipment, Hot and cold therapy equipment, Ultrasound therapy equipment		40	50	10
21.	Determine the taste threshold for three different sensations- sweet salty and sour		40	50	10
22.	Determine the moisture content in the given sample of oil/fat		40	50	10
23.	Determine the impurities in the given sample of oil.		40	50	10
24.	Determines the acid value and free fatty acids in the given sample of oil/fat.		40	50	10
25.	Determine the peroxide value in the given sample of fat or oil.		40	50	10

Note: -All the above Games can be selected from the list of SGFI/AIU/IOA

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
1.	High end computers for record keeping	Processor Intel Core i7 with Open GL Graphics Card, RAM 32 GB, DDR3/DDR4, HDD 500 GB, Graphics Card NVIDIA OpenGL 4 GB, OS Windows 10	All
2.	Aerobics and Gymnastic	Basic facilities and equipment's – Balance Beams, Gymnastic Ball, Gymnastic Chalk, Gymnastic Clubs, Flex Floor Systems, High Bars, Hoops, Horizontal Bars, Leotards, Music, Parallel Bar, Pommel Horses, Ribbons, Rings, Ropes, Single Bar Trainer, Spotting Blocks, Streamers, Trampoline, Tumble Track, Uneven Bar, Vault, Vault Spring Board Gymnastic Accessories – Chalk, Grips, Wrist Supports, Mat, Tape, Socks Singlets, Pants Shoes, Shorts Aerobics- Resistance bands, Jump rope, Step bench or box, Abdominal wheel, Exercise mat, Gliding discs, dumbbells, fitness trampolines, hoops	2
3.	Striking & Fielding sports	Complete Cricket Kit, Football Kit, Bowling Kit, Hockey Kit	4
4.	Net/Wall Sports	Complete Volley Ball and basketball kit	3
5.	Racket Game	Complete Tennis Kit, Table Tennis Kit and badminton kit	5
6.	Outdoor games	Complete Kho-Kho and Kabaddi and cycling kit	6
7.	Indoor games	Complete Chess kit, Carrom kit, Swimming kit, Boxing kit, Karate kit, Weightlifting kit, Power Lifting kit, Archery kit and Roller-Skating kit	7
8.	Physique Training	Cardio Machines- Treadmills, Elliptical Trainers, Exercise Bikes, Rowing Machines, Indoor Bikes, Vibration Machines, Steppers Recumbents Dumbbells, Multi-Purpose Bench, power rack, Adjustable Dumbbell Set 2 x 3-10 kg, Exercise mat, resistance band, balance trainer	7
9.	Sports and wellbeing equipment's for physically challenged and impairments.	Fusion Wheel – all-in-one portable wheelchair gym, Pedal exerciser, Deluxe hand exerciser, Greeper sports shoelaces, Active Hands, Ramble Tag Guidance Aid, Cat Tongue Grip Tape Adaptive Cycling- Straps, Leg/ Foot Adapters, Prosthetics, Steering Dampener, Handlebar Adapters, HANDCYCLING- Wheelchairs, Bike-On Handcycles, Trikes, Racing Wheelchairs, Trikes, Recumbent Bikes, All-terrain Handcycles, Mono Cycling, Hand Bikes - Off-Road, Cross Country, Racing, Downhill Archery - Field Tripod and Quad Mounts (Archery & Gun), In-Line Draw-Loc, Mounts (Archery & Gun), Stands (Gun), Mounts (Archery & Gun) Binoculars and Rests (Gun), Crossbows (Archery), Wheelchair Platform Stabilizing Crutch Poles, Dampeners, Crossbows (Archery), Hands free shooting rest (Gun) Bowling: ramp, roll assist Fitness: Anti-Gravity Treadmill, LapMat for Wheelchairs, Strike Assist, Adaptive Treadmill	8

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
10.	Yoga	Yoga Mats, Yoga Rollers, Yoga Blocks, Aero Yoga Clothing Blankets, cloth Straps, Bolsters, Wheels	9-16
11.	Fitness and wellbeing equipment's	Health monitoring devices for overall health- Personal health monitor for heart health, Blood sugar monitoring device, Wireless blood pressure device, Smart watch to track heart function, Hot and cold therapy equipment, Massage therapy equipment, Ultrasound therapy equipment	18-20
12.	Taste kit -To test three different sensations- sweet salty and sour	Salt solution (%) -0.5, 0.8, 1.0, 1.2, 1.5, Sugar solution (%) - 0.05, 0.5, 0.7, 1.0, 1.2, Citric acid (%) - 0.02, 0.04, 0.1, 0.5, 1.0 Spoons, Bowls, Beakers, Plain distilled water	21
13.	Test kit to measure peroxide value in the oil	Reagents: Acetic acid-chloroform solution, Saturated potassium iodide solution, Sodium thiosulphate solution- 0.1 N, Starch solution (1%) Apparatus: Pipette 1ml capacity, Conical flask	25
14.	Test kit to measure acid value and free fatty acids in the oil	Sample of oil/fats namely any refined oil or hydrogenated fat. Reagents - ethyl alcohol (95%), phenolphthalein indicator solution, standard aqueous sodium or potassium hydroxide solution (0.1 N or 0.5 N), Pipette (10 ml), Conical flask	24
15.	Test kit to measure impurities in the oil	Sample of Oil/fat, Oven-electric, maintained at $100 \pm 1^\circ\text{C}$., Desiccator, Weighing balance, Filter paper	23
16.	Test kit to measure moisture content in the oil	Sample of oil/fat, Moisture dish-made of porcelain, silica, glass or aluminum, Oven-electric, maintained at $105 \pm 1^\circ\text{C}$., Desiccator Weighing balance	22

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher with ISBN
1.	Practical Applications in Sports Nutrition	Heather Hedrick Fink, Alan E. Mikesky	Jones & Bartlett Learning (2020) ISBN No: 978-1284181340
2.	Massage and Medical Gymnastics,	Lace, M. V.	London: J & A Churchill Ltd. ASIN: B000RY4YB0
3.	ACSM's Guidelines for Exercise Testing and Prescription	Gary Liguori	LWW; (2021) ISBN-13: 1975150198-978
4.	Essentials of Strength Training and Conditioning	Javair Gillett	Human Kinetics, (2021) ISBN-13: 1718210868-978
5.	Practical Applications in Sports Nutrition	Heather Hedrick Fink, Alan E. Mikesky	Jones & Bartlett Learning, (2017) ISBN-13: 1284101393-978
6.	Health Fitness Management	Mike Bates, Mike Spezzano, Guy Danhoff	Human Kinetics, (2019) ISBN-13: 1450412230-978
7.	Yoga for Every Body: A beginner's guide to the practice of yoga postures, breathing exercises and meditation	Luisa Ray, Angus Sutherland	Vital Life Books (2022) ISBN-13: 1739737009-978
8.	Science of Yoga: Understand the Anatomy and Physiology to Perfect Your Practice	Ann Swanson	DK Publisher, (2019) ISBN-13: 1465479358-978
9.	Mudras for Modern Living: 49 inspiring cards to boost your health, enhance your yoga and deepen your meditation Cards	Swami Saradananda	Watkins Publishing (2019) ISBN-13: 1786782786-978
10.	Principles and Methods of Adapted Physical Education & Recreation	Kristi Roth, Laurie Zittel, Jean Pyfer, David Auxter	Jones & Bartlett Learning, (2016) ISBN-13: 1284077810-978
11.	Adapted Physical Education and Sport Sixth Edition	Joseph P. Winnick, David L. Porretta	Human Kinetics, (2016) ISBN-13: 1492511533-978

S. No.	Titles	Author(s)	Publisher with ISBN
12.	Counselling Skills in Applied Sport Psychology: Learning How to Counsel	Paul McCarthy, Zoe Moffat	Routledge, (2023) ISBN-13: 1032592589-978
13.	Basic Counselling Skills: A Helper's Manual	Richard Nelson Jones	Sage Publication 2012, New Delhi.
14.	Advancements in Mental Skills Training (ISSP Key Issues in Sport and Exercise Psychology)	Maurizio Bertollo, Edson Filho, Peter Terry	Routledge, (2020) ISBN-13: 0367111588-978
15.	The Relaxation and Stress Reduction Workbook	Martha Davis, Elizabeth Robbins, Matthew McKay, Eshelman MSW	A New Harbinger Self-Help Workbook (2019)
16.	Patanjalis Yoga Sutras	Swami Vivekananda	Fingerprint Publishing (2023) Prakash Books India Pvt Ltd, New Delhi ISBN-13: 9354407017-978

(b) Online Educational Resources:

1. https://onlinecourses.swayam2.ac.in/aic19_ed28/preview- introduction to Yoga and Applications of Yoga
2. https://onlinecourses.swayam2.ac.in/aic23_ge09/preview- Yoga for Creativity
3. https://onlinecourses.swayam2.ac.in/aic23_ge05/preview- Yoga for concentration
4. https://onlinecourses.swayam2.ac.in/aic23_ge06/preview- yoga for memory development
5. https://onlinecourses.nptel.ac.in/noc21_hs29/preview-Psychology of Stress, Health and Well-being
6. https://onlinecourses.swayam2.ac.in/nce19_sc04/preview- Food Nutrition for Healthy Living - Course – Swayam
7. <https://www.classcentral.com/course/swayam-fitness-management-17608- Fitness Management from Swayam>
8. https://onlinecourses.swayam2.ac.in/nce19_sc04/preview-Food Nutrition for Healthy Living
9. https://onlinecourses.swayam2.ac.in/cec21_ed02/preview Health Education and Recreation
10. https://onlinecourses.swayam2.ac.in/cec22_ed31/preview Sports Administration and Management

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

(c) Others:

1. <https://www.yogajournal.com/yoga-101/philosophy/good-read>
2. <http://hdl.handle.net/123456789/38171- Yoga Philosophy>
3. <https://yoga.ayush.gov.in>
