Curriculum

of

Diploma Programme

in

Garment Technology

State Board of Technical Education (SBTE)
Bihar

Semester – IV

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				
	2452401	**Indian & World Costumes**	3	-	4	2	9	6
	2452402	**Production Management**	2	1	-	2	5	4
	2452403	**Clothing Production Machines and Equipment**	2	1	-	2	5	4
	2452406	**CAD in Garment Technology**	-	-	4	2	6	3
	2452404	**Advanced Garment Manufacturing**	3	-	4	2	9	6
	2400505	**Entrepreneurship development & Start-ups** (Common for All Programmes)	-	-	4	2	6	3
	2400007	**Indian Constitution** (Common for All Programmes)	1	-	-	-	1	1
	2400408	**Employability Skills Development** (Common for All Programmes)	1	-	-	-	1	1
	2400107	**Professional Ethics** (Non-exam course) (CE, CSE, ELX, ELX (R), FTS, ME, ME (Auto), AIML, MIE, CHE, CRE, FPP, GT)	1	-	-	-	1	1
	2400009	**Open Educational Resources** (Non-exam course) (FTS, CHE, CSE, EE, ME, ME (Auto), MIE, ELX, AIML, CRE, CACDDM, FPP, GT)	1	-	-	-	1	1
Total			**14**	**2**	**16**	**12**	**44**	**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 - IV

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)	
	2452401	**Indian & World Costumes**	30	70	20	30	20	30	200
	2452402	**Production Management**	30	70	20	30	-	-	150
	2452403	**Clothing Production Machines and Equipment**	30	70	20	30	-	-	150
	2452406	**CAD in Garment Technology**	-	-	20	30	20	30	100
	2452404	**Advanced Garment Manufacturing**	30	70	20	30	20	30	200
	2400505	**Entrepreneurship development & Start-ups**	-	-	20	30	20	30	100
	2400007	**Indian Constitution** (Common for All Programmes)	25	-	-	-	-	-	25
	2400408	**Employability Skills Development** (Common for All Programmes)	25	-	-	-	-	-	25
	2400107	**Professional Ethics**	25	-	-	-	-	-	25
	2400009	**Open Educational Resources**	25	-	-	-	-	-	25
Total			**220**	**280**	**120**	**180**	**80**	**120**	**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 : 2452401/T2452401/P2452401/S2452401)

B) Course Title : Indian and World Costumes

C) Pre-requisite Course(s) :

D) Rationale :

Fashion begins with historic costumes. All the designers still create designs through inspirations derived from historic costumes. A vast complex style of garments exists in this field and one should know in details the costumes of Indian and World costumes to master the fashion. This course aims at building a foundation for the further courses related to fashion and clothing technology and other allied courses in coming semesters. Garment technology students should have thorough knowledge of Indian and Western historical costumes and accessories according to religion, climate, ethical values, social life-style and prosperity. This course will help student to distinguish traditional costumes and relate them to the costumes and life style of different countries of the world. The course focuses on developing imagination which enables students to use this attire as source of inspiration to develop contemporary fashion.

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 Modify fashions of western countries from different time periods to create contemporary garments.

CO-2 Create styles inspired from the eastern costumes for given design requirement.

CO-3 Use elements, styles and accessories pertaining to various state of India.

CO-4 Create designs for costumes of specified regions of India.

CO-5 Recommends styles for future fashion.

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	-	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	**2452401**	Indian and World Costumes	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)						
			Theory Assessment (TA)		Term Work& Self Learning Assessment (TWA)		Lab Assessment (LA)		Total Marks (TA+TWA+LA)
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
Garment Technology	**2452401**	Indian and World Costumes	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), 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: T2452401

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO1a. Explain origin and need of clothing. *TSO1b.* Explain with sketches the specified/relevant features of 18th and 19th century European costumes. *TSO1c.* Explain with sketches the specified/relevant features of 20th century European costumes. *TSO1d.* Explain with sketches the specified/relevant features of 18th and 19th century American costumes. *TSO1e.* Compare specified features of the given costumes of the given region.	**Unit-1.0 Western Costumes- Europe and America** 1.1 **Introduction to Costume:** Origin of Clothing- dress out of painting, cutting and other methods. Growth of dress, Need for clothing- factors influencing costume changes- role of costumes as a status symbol, sex appeal, fashion and seasons. 1.2 **Earlier European costumes:** (a) **Overview of 18th century European costumes-** Chinoiserie, Coats and capes, Corsets, Engagements, Knee Breeches, Panniers, Polonaise Styles, Robes, Sack Gowns, Trousers. (b) **Changes in 19th century European costumes due to Industrial Revolution** – Bathing Costumes, Besty, Bloomers, Coats, Crinoline, Ditto Suits, The Dandy Dress. 1.3 **20th century costumes in Europe- 1900-2000: –** Brassiers, hobble skirts, jumper gown, peg top, sack suit, trench coats, little black dress, sarongs, military uniforms and civilian dress, zoot suit, a-line skirt, bell bottoms, cat suit, Gaucho pants, hot pants, peasant look, mini skirt, halter top, velour, baggy jeans, Goth style, sweatshirt, wonder bra. 1.4 **Earlier American costumes: (**a) American Revolution in 18th century. (b) Native American costumes in 19th century- western dress, Blankets, Breechclout, Cloaks, Leggings, Skirt. 1.5 **20th century – American** influence on world costumes – 1900-2000	**CO1**
TSO2a. Explain with sketches the specified traditional costumes of the given country. *TSO2b.* Explain with sketches the specified traditional make up styles and accessories of the given country.	**Unit-2.0 Far Eastern Costumes- Japan and Indonesia** 2.1 **Japanese costumes:** Tradition costumes of Japan- Kimono, Kosode, Furisode, Hirosode, Hakama, OBI – Saha, Geisha. 2.2 Make up, Hairstyles and Body decoration, Accessories and Footwear- Geta, Tabis, Zori. 2.3 **Indonesian costumes:** National costumes- Batik, Kebaya, Peci. 2.4 **Indonesian Regional costumes:** Baju Kolo, Beskap, Baju Kurung, Baju Bodo, Headgears and Accessories.	**CO1, CO2, CO3**
TSO3a. Explain with sketches costumes, accessories and ornaments of Jammu and Kashmir. *TSO3b.* Explain with sketches costumes, accessories and ornaments of Punjab.	**Unit-3.0 Indian Costumes- Northern Region** **3.1 Jammu and Kashmir:** (a)Costumes: Peharan, Salwar, Pattu, Skull	**CO2, CO3, CO4**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO3c. Explain with sketches costumes, accessories and ornaments of Rajasthan. *TSO3d.* Compare specified costumes North India.	Cap, Khaji. Costumes of Dogra, Zachaldara, Kharboo, Tribal villages. (b) Accessories and Ornaments. **3.2 Punjab:** **(**a) Costumes: Tehmed, Kurta, Pyjama, salwar, Kameeze, Orhani, Churidar. Ghagra, Dupatta, Turban, Khes. (b) Accessories and Ornaments. **3.3 Rajasthan:** Costumes: Dhoti, Bandiya, Angarakha, Potia, Jodhapur Breeches, Achkan, PichrangaPagdi, Kamberbandth, Khes, Turban. Accessories and Ornaments.	
TSO4a. Explain with sketches specified relevant costumes, accessories and ornaments of Gujarat. *TSO4b.* Explain with sketches costumes, accessories and ornaments of the specified state. *TSO4c.* Compare with sketches costumes, accessories and ornaments of the specified regions. *TSO4d.* Compare costumes of specified regions.	**Unit-4.0 Indian Costumes- Southern and Western Region** **4.1 Gujarat:** (a) Costumes: Kanchali, Chorno, Angarkha, Ghagra, Pheto, Safo, Different types of Sarees and Textiles. (b) Accessories and Ornaments. **4.2 Maharastra:** (a) Costumes: Dhoti, Sadra, Pheta, Uparni, Barabandi, Coat, Pagdi, Choli, Golnesana, Sakachcha- Nesana (b) Draping style – Golnesana, Sakachcha-Nesana Dhoti, Pheta, Uparna, Accessories and Ornaments. **4.3 Karnataka:** (a) Costumes: Dhotara, Shalya, Turban, Kuppasa, Saree draping – Coorg saree. (b) Accessories and Ornaments.	**CO2, CO3, CO4**
TSO5a. Identify factors affecting fashion trends in the given situation. *TSO5b.* Prepare survey report of specified Fashion Trends. *TSO5c.* Predict fashion using fashion forecast data for given situation. *TSO5d.* Suggest costumes for given situation based on forecast.	**Unit-5.0 Present and Future Fashion** 5.1 Factors affecting fashion trends. 5.2 Current trends in western and Indian costumes. 5.3 Forecast and Design for future fashion. 5.4 Costumes selection for different situation.	**CO5**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical : P2452401

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant Cos Number(s)
LSO1. Illustrate and Render 18th century European costumes of Male and Female.	1.	18th century European costumes: 2 Male costumes and 2 Female costumes*	CO1
LSO2. Illustrate and Render 19th century European costumes of Male and Female.	2.	19th century European costumes: 2 Male costumes and 2 Female costumes.	CO1
LSO3. Make a Project on 20th century European costumes of Male and Female.	3.	20th century European costumes: 2 Male costumes and 2 Female costumes.	CO1
LSO4. Illustrate and Render 18th century American costumes of Male and Female.	4.	18th century American costumes: 2 Male costumes and 2 Female costumes.	CO1

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant Cos Number(s)
LSO5. Illustrate and Render 19th century American costumes of Male and Female.	5.	19th century American costumes: 2 Male costumes and 2 Female costumes.	CO1
LSO6. Illustrate and Render 20th century American costumes of Male and Female.	6.	20th century American costumes: 2 Male costumes and 2 Female costumes.	CO1
LSO7. Illustrate and Render Japanese costumes of Male and Female.	7.	Japanese costumes: 2 Male costumes and 2 Female costumes*	CO1, CO2, CO3
LSO8. Illustrate and Render Indonesian costumes of Male and Female.	8.	Indonesian costumes: 2 Male costumes and 2 Female costumes.	CO1, CO2, CO3
LSO9. Illustrate and Render Kashmiri Costumes and Jewelry of Male and Female.	9.	Kashmiri Costumes and Jewelry: 2 Male costumes and 2 Female costumes*	CO2, CO3, CO4
LSO10. Illustrate and Render Punjabi Costumes and Jewelry of Male and Female.	10.	Punjabi Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4
LSO11. Illustrate and Render Rajasthani Costumes and Jewelry of Male and Female.	11.	Rajasthani Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4
LSO12. Illustrate and Render Gujarati Costumes and Jewelry of Male and Female.	12.	Gujarati Costumes and Jewelry: 2 Male costumes and 2 Female costumes*	CO2, CO3, CO4
LSO13. Illustrate and Render Maharashtrian Costumes and Jewelry of Male and Female.	13.	Maharashtrian Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4
LSO14. Illustrate and Render Karnataka Jewelry of Male and Female.	14.	Karnataka Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4
LSO15. Illustrate and Render Current Fashion Trends of Male and Female costumes.	15.	Current Fashion Trends: 2 Male costumes and 2 Female costumes*	CO5
LSO16. Design a collection based on Fashion Forecasting.	16.	Collection based on Fashion Forecasting.	CO5

L) Suggested Term Work and Self Learning: S2452401 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. Assignments:

(i) Maintain a scrapbook containing images of ancient costumes.
(ii) Various draping techniques used in different countries.
(iii) Watch historical movie clips for three-dimensional impact of historical costumes.

b. Micro Projects:

1. **Classification of garments**: Classify the garment based on different wearing styles such as Indian costumes and Western costumes of a particular period.
2. **Market Survey**: Associate current trends in garments and accessories with periodic costumes and accessories.
3. **Picture Collection / Illustration**: Collect pictures of costumes from various parts and periods of India.
4. **Redesigning:** Redesign for a period movie, such as Jodha Akbar, Bajirao Mastani, etc.
5. **Window display:** Develop a collection based on any historical era and organizing a fashion show towards the end of the semester.

c. Other Activities:

1. Seminar Topics:

- American Costume Trends
- Japanese Costume Trends
- Costumes of Northern Region.
- Costumes of Southern Region

2. Visits: Visit nearby stores of foreign and national costumes/garments.

3. Self-learning topics:
    1. European Costume
    2. Japanese Costume Trends
    3. Costumes of Eastern Region.
    4. Costumes of Western Region

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%	10%	15%	-	-	20%	20%
CO-2	10%	20%	10%	25%	-	10%	20%
CO-3	15%	20%	15%	25%	33%	15%	20%
CO-4	30%	20%	30%	25%	33%	15%	20%
CO-5	30%	30%	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 (Cl) Hours	Relevant COs Number (s)	Total Marks	ETA(Marks)		
				Remember (R)	Understanding (U)	Application & above(A)
Unit-1.0 Western Costumes- Europe and America	08	CO1	08	3	3	2
Unit-2.0 Far Eastern Costumes- Japan and Indonesia	08	CO1, CO2, CO3	14	4	4	8
Unit-3.0 Indian Costumes- Northern Region	12	CO2, CO3, CO4	14	4	4	6
Unit-4.0 Indian Costumes- Southern and Western Region	12	CO2, CO3, CO4	14	4	4	6
Unit-5.0 Present and Future Fashion	08	CO5	20	5	5	10
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.	18th century European costumes: 2 Male costumes and 2 Female costumes.*	CO1	30	60	10
2.	19th century European costumes: 2 Male costumes and 2 Female costumes.	CO1	40	50	10
3.	20th century European costumes: 2 Male costumes and 2 Female costumes.	CO1	30	60	10
4.	18th century American costumes: 2 Male costumes and 2 Female costumes.	CO1	30	60	10
5.	19th century American costumes: 2 Male costumes and 2 Female costumes.	CO1	30	60	10
6.	20th century American costumes: 2 Male costumes and 2 Female costumes.	CO1	30	60	10
7.	Japanese costumes: 2 Male costumes and 2 Female costumes.*	CO1, CO2, CO3	30	60	10
8.	Indonesian costumes: 2 Male costumes and 2 Female costumes.	CO1, CO2, CO3	40	50	10
9.	Kashmiri Costumes and Jewelry: 2 Male costumes and 2 Female costumes.*	CO2, CO3, CO4	40	50	10
10.	Punjabi Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4	40	50	10
11.	Rajasthani Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4	30	60	10
12.	Gujarati Costumes and Jewelry: 2 Male costumes and 2 Female costumes.*	CO2, CO3, CO4	30	60	10

S. No.	Laboratory Practical Titles	Relevant Cos Number (s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
13.	Maharashtrian Costumes and Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4	40	50	10
14.	Karnataka Jewelry: 2 Male costumes and 2 Female costumes.	CO2, CO3, CO4	40	50	10
15.	Current Fashion Trends: 2 Male costumes and 2 Female costumes.*	CO5	40	50	10
16.	Collection based on Fashion Forecasting.	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 beprepared 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, 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 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.	Pencil	Pencil: HB, 2B, 4B	1 to 8
2.	Drawing sheets	Drawing sheets	1 to 8
3.	Poster and water colours	Poster and water colours	1 to 8
4.	Brush	Brush: Flat (1,3,6,8), Round (0,2,4,6)	1 to 8
5.	Fabric	Fabric: Cotton, Linen, Silk, Dhoti, Sarees, etc.	9 to 15
6.	Display board	Display board: 4ft × 4ft	9 to 15
7.	Computers	Computers with internet connectivity	16

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Fashion from Ancient Egypt to the present day	Mila Contini	West Duxbury, Manchester, ISBN No. 9780517099872
2.	History of fashion in 20th Century	Gertrud Lehnert	West Duxbury, Manchester, ISBN No. 9783829020336
3.	Fashion, Costume and Culture: Clothing, Headwear, Body Decorations and Footwear through the ages	Sara Pendergast and Tom Pendergast, Sarah Hermsen Project Editor	Thomson Gale ISBN: 9780787654214
4.	History of 20th Century Fashion	Elizabeth Ewing	Quite Specific Media Group Ltd.; ISBN: 9780896762381
5.	Ancient Indian Costume	Alkazi, Roshen	South Asia Books ISBN: 9780836413342
6.	Costumes and textiles of royal India	Kumar, Ritu	Christie's, ISBN: 9780903432559
7.	Traditional Indian Costume and Textile	Dr. Parul Bhatnagar	Abhishek publication, Chandigarh
8.	Textile and embroidery of India	John Irvin	Marry Publications, Bombay.
9.	Indian Textiles	John Gillow& Nicholas Barnard	

(b) Online Educational Resources:

1. http:// www.youtube.com/watch?v=J31eENrUreU
   Ancient Costume Accessory ideas Roman and Greek accessories.
2. http://www.youtube.com/watch?v=BQYloC_QcWY
   How to wear a Toga the Ancient Roman Way.
3. http://www.youtube.com/watch?v=AjV2TT_lj_c
   Ancient Greek Fashion
4. http://www.youtube.com/watch?v=3ncmFyc7O6A
   Changing fashion of Indian women.
5. http://www.youtube.com/watch?v=n7ndRwq.JYDM
   Indus Valley Civilization.

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A) Course Code : **2452402/T2452402/S2452402)**

B) Course Title : Production Management

C) Pre- requisite Course(s) : Fundamentals of Garment Technology, Garment Manufacturing Process

D) Rationale :

To maximization of production output and quality enhancement in the garment manufacturing industry, Production Management is the most useful tool. This course has been designed keeping in view the specific needs of garment industry. The students will learn various production management skills. They will be able to apply the principles of industrial engineering and management for continuous improvement in garment industry. This course will facilitate students to install and improve integrated system of men, material and machine by using the quantitative techniques of management

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 work study & method study tool to maximize the resources and improve the process.

CO-2 Apply principles of planning and process control in a garment manufacturing industry.

CO-3 Perform capacity allocation and do style allocation in lines.

CO-4 Calculate production cost and break-even quantity for given situation.

CO-5 Modify maintenance activity plan in garment manufacturing industry as per requirement.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Programme Outcomes (POs)							Programme SpecificOutcomes* (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** Lifelong Learning	**PSO-1**	**PSO-2**
CO-1	3	3	2	2	-	2	-		
CO-2	3	2	3	3	3	-	3		
CO-3	3	-	2	2	-	-	2		
CO-4	3	3	2	2	-	3	2		
CO-5	3	2	3	3	2	3	-		

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:

Boardof 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	**2452402**	Production Management	02	01	-	02	05	04

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	**2452402**	Production Management	30	70	20	30	-	-	150

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: T2452402

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Identify the steps for the given method study *TSO 1b.* Apply the relevant recording technique forthe given method study. *TSO 1c.* Apply the steps involved in time study inthe given situation. *TSO 1d.* Interpret the given performance ratingsand given allowances. *TSO 1e.* Calculate the standard time in the givensituation.	**Unit 1.0 Work Study and Method Study:** 1.1 Introduction, Need 1.2 Method study: steps, standard operatingprocedure (SOP), 1.3 Tools and techniques, flow charts 1.4 Time study-procedure, 1.5 Performance rating and allowances, 1.6 Calculation of standard time (SAM, SMV), Motion study therbligs SIMO charts, motioneconomy.	**CO1**
TSO 2a. Identify requirements of pre planning for specified garment industry *TSO 2b.* Describe the method to make use ofrelevant statistical tool for garment quality measurement. *TSO 2c.* Derive the criteria to accept or rejectthe production batch for the given situation	**Unit 2.0 Production Planning and Control** 2.1 Objectives of PPC, Functions 2.2 Line balancing in garment industry, Statistical Quality Control- quality measurement, processcontrol, control charts for attributes (X-bar, R- bar) and variables (P-chart, nP-chart, c-chart) 2.3 Acceptance sampling	**CO2**
TSO 3a. Identify resource requirements for capacity planning for specified garmentindustry *TSO 3b.* Organize the production facility withrespect to specified quantity and quality. *TSO 3c.* Develop an overall layout of the production with estimates of the timeand resources for the given situation. *TSO 3d.* Identify the bottle necks and providesolutions for them. *TSO 3e.* Manage the team effectively	**Unit 3.0 Production Management** 3.1 Job description of production manager 3.2 KPI of production manager – Skill required for production manager, Team under production management, Daily works management of production manager 3.3 Resource requirement and fulfilment 3.4 Introduction to capacity planning – Planning of capacity using minutes in Industrial Engineering 3.5 On time arrival of garments cut panels, trimsand accessories. 3.6 Worker's requirement –Skills availability andrequirement 3.7 Line balancing, Bottle neck management,Efficiency improvement 3.8 Learning curve in production development – Calculation of monthly capacity planning	**CO3**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	chart,Requirement vs. actuals 3.9 Cost reduction, Supporting department foreffective production management Team management skills	
TSO 4a. Control work in progress requirement in production floor *TSO 4b.* Optimize the inventory at the differentlevel in production department *TSO 4c.* Modify the work in progress system asper requirement	**Unit 4.0 Inventory Management** 4.1 Importance of inventory management inproduction floor 4.2 Allowed Work In Progress for the departmentand inside the workstation of different production departments 4.3 Scientific inventory management techniques • Kanban system • Supermarket model WIP monitoring template in floor and steps to ensure the WIP	**CO4**
TSO 5a. Choose relevant type of maintenance forthe given situation with justification *TSO 5b.* Schedule the maintenance operation forthe given machine. *TSO 5c.* Calculate various indices related to maintenance, equipment utilization, manpower development for the given situation.	**Unit 5.0 Maintenance Management:** 5.1 Objective, Maintenance cost, Types ofmaintenance 5.2 Maintenance performance evaluation, TPMP, 3.10Down time index, maintenance cost index, Equipment utilization, manpower efficiency	**CO5**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: (Not Applicable)

L) Suggested Term Work and Self Learning: S2452402 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.

1. Take actual data from workshop and calculation of standard time (SAM, SMV),
2. For a physically challenging task conduct a Motion study (Therbligs SIMO charts, motion economy).
3. For a garment industry data balance, the line.
4. Prepare a chart for application of different Statistical Quality Control techniques in different departments of garment industry.
5. Collect actual data on different garment lines and apply quality measurement, process control, control charts for attributes (X-bar, R- bar) and variables (P-chart, nP-chart, c-chart)
6. For a vendor of garment industry prepare an Acceptance sampling plan.

b. Micro Projects:

1. Visit a nearest garment factory and record the data for method study of any five garments by using any one recoding technique and prepare the flow process chart for the same.
2. Collect the production data from garment industry and apply control chart for attributes and variables to check whether the quality and process is under control.

3. Collect the relevant data for five different garments from a nearby industry and compare the resource planning for the same.
4. Collect the inventory data for five different garments from a nearby industry and map their model of WIP.
5. Visit the nearby garment industry and prepare the maintenance schedule for entire unit.

c. Other Activities:

1. Seminar Topics:
   - Case studies of work/method study for Garment Industry.
   - Various Production management and Industrial Engg. Tools for Garment Industry
   - Inventory Management in Garment Industry.
   - Statistical tools for Production control in Garment Industry

2. Visits: Visit nearby Garment Industry having Sewing facilities. Prepare report of visit with special comments on Production Process, Production planning, management tools used and cost of production.

3. Self-learning topics:

   - Production management tools in Garment.
   - Maintenance Schedule of machines used in Garment Industry.
   - Cost calculation for production of a garment such as Shirt, Bottoms, T-shirts, Jeans.

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%	20%	15%	20%	15%	-	-
CO-2	10%	15%	10%	20%	15%	-	-
CO-3	15%	25%	15%	20%	10%	-	-
CO-4	30%	25%	30%	20%	30%	-	-
CO-5	30%	15%	30%	20%	30%	-	-
Total Marks	**30**	**70**	**20**	**20**	**10**	-	-
			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 Work Study and MethodStudy	8	CO1	14	4	4	6
Unit 2.0 Production Planning andcontrol	11	CO2	10	4	4	2
Unit 3.0 Production Management	11	CO3	18	4	4	10
Unit 4.0 Inventory Management	10	CO4	18	4	4	10
Unit 5.0 Maintenance Management	8	CO5	10	4	4	2
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): (Not Applicable)

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: (Not Applicable)

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Motion and Time Study Design and Measurement of Work	Barnes , Ralph M	Wiley Eastern Delhi, 2008 ISBN: 978-8126522170
2.	Production & Operations Management Goods & Services Approach Text and Cases	S. V. Deshmukh A.K.Chitale Nishith Dubey	Archer & Elevators Publishing House ISBN: 978-93-86501-19-7
3.	Apparel Manufacturing Technology	T Karthik	Taylor and Francis, 2016 ISBN : 9781498763752
4.	Production, Planning and Control & Industrial Management	Jain,K.C.; Agarwal,L.N.	Khanna Publishers, Delhi ISBN: 978-8174092922
5.	Breakeven Analysis: The Definitive Guide to Cost-Volume- Profit Analysis	Cafferky,Micha el.	Business Expert Press ISBN : 978-1606490167
6.	Maintenance Engineering and Management	Mishra R.C	Prentice Hall India Learning PrivateLimited, New Delhi, ISBN-13: 978-8120345737
7.	Industrial Engineering andProduction Management	Martand Telsang	S.Chand and Co. New DelhiISBN-13:978-8121917735
8.	Industrial engineering In apparel production	V Ramesh Babu	Woodhead Publishing India Pvt. LtdISBN : 9789380308173 ; 978-0-85709-107-9;

(b) Online Educational Resources:

1. https://www.onlineclothingstudy.com/2017/07/garment-manufacturing-process-fabric-to-fashion.html
2. https://nptel.ac.in/courses/112107143
3. https://www.edx.org/learn/product-management
4. https://textilevaluechain.in/in-depth-analysis/articles/textile-articles/garment-manufacturing-industry/
5. https://gb.coursera.org/courses?query=product%20management
6. https://www.youtube.com/watch?v=rvTC8FPiN50
7. https://www.youtube.com/watch?v=CmgXwrFIatw
8. https://www.youtube.com/watch?v=yhlenn1nctM

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

(c) Others:

1 https://www.udemy.com/course/product-management-a/

2 Apparel Production Management and the Technical Package; Paula J. Myers-McDevitt; Fairchild Books; ISBN: 978-1563678691

3 Introduction to Clothing Production Management; A.J. Chuter; Wiley-Blackwell; ISBN : 9780632039395

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A) Course Code : 2452403/T2452403/S2452403)

B) Course Title : Clothing Production Machines and Equipment

C) Pre- requisite Course(s) :

D) Rationale :

The Garment manufacturing process requires numerous machineries for their manufacturing. Also certain super-specialized machineries are used in this field. This course introduces these machineries to the students along with their uses, parts and assembly in detail. Student will learn the different process sequence steps in apparel industry and learn different sewing machine settings which will help them to overcome the problems in production of garments.

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 Develop marker plan for given fabric width.
CO-2 Use cutting machine to separate garment components.
CO-3 Select suitable needle for given fabric and sewing machine.
CO-4 Use relevant work-aids and attachments for specified sewing machines.
CO-5 Use fusing and pressing equipment.

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	-	3	-	-	2	-		
CO-2	3	2	-	-	-	2	-		
CO-3	3	3	-	-	-	2	2		
CO-4	3	3	-	-	-	2	2		
CO-5	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	**2452403**	**Clothing Production Machines and Equipment**	02	01	-	02	05	04

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	**2452403**	Clothing Production Machines and Equipment	30	70	20	30	-	-	150

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: T2452403

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Identify the processes in the specified flow chart of apparel industry. *TSO 1b.* Outline the marker plan for bulk cutting of the given type of material. *TSO 1c.* Distinguish the features between the given types of spreading. *TSO 1d.* Distinguish the features between the types of given packages.	**Unit-1.0 Marker Planning and Spreading** 1.1 Process flow chart in apparel industry. 1.2 Marker planning- Definition, manual and computerized marker planning, Types of marker (block, continuous, half garment, whole garment, single size, multiple size (sectional, interlocked, mixed size), factors affecting efficiency of marker plan. 1.3 Spreading – Definition, Types of spread (single, multiple, stepped ply) and forms of spreading (one way, face to face and two way). requirements for fabric spreading – methods (Manual, spreading carriage, automatic spreading). 1.4 Types of fabric packages and importance of longer length fabric packages.	**CO1**
TSO 2a. Identify requirements for quality cutting of the given type of material. *TSO 2b.* Choose the relevant cutting tool(s) to separate the specified garment components with justification. *TSO 2c.* Distinguish the salient features of the given type of cutting tools. *TSO 2d.* Suggest the remedies in the defects in cutting with justification.	**Unit-2.0 Cutting and Cutting Tools** 2.1 Type and requirements of quality cutting. 2.2 Cutting tools- Portable knives (straight knife, round knife), stationary knives (band knife, die cutting machine), specialized knives- notchers, drills. 2.3 Advanced cutting techniques- laser cutting, ultrasonic cutting, water jet cutting. 2.4 Defects in cutting and their remedies.	**CO2**
TSO 3a. Identify the functions of the given type of needle(s). *TSO 3b.* Describe with sketches the specified type of needle. *TSO 3c.* Choose relevant needle for given fabric with justification. *TSO 3d.* Suggest ways to minimize the specified defects produced due to faulty needles.	**Unit-3.0 Sewing Needles** 3.1 Types and classification. 3.2 Parts in needle. 3.3 Functions of different parts in sewing needle. 3.4 Sewing needle sizes – American and European needle numbering systems. 3.5 Selection criteria for sewing needles. 3.6 Defects due to faulty needles.	**CO3**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 4a. Describe with sketches the parts in the specified type of sewing machine. *TSO 4b.* Select the relevant setting in the SNLS machine for the specified type of fabric. *TSO 4c.* Describe with sketches the salient features of the Over-lock machine and Flat-lock machine. *TSO 4d.* Describe the threading diagram of the given type of machine.	**Unit-4.0 Sewing Machines** 4.1 Single Needle Lock Stitch Sewing machine (SNLS)- Threading diagram, parts and their functions, feed, tension, take up, pedal and other settings. 4.2 Over-lock machine- classification, threading diagram, parts and functions, differential feed mechanism, Needle height, Feed dog height angles, position of upper and lower knife. 4.3 Flat lock machine – Threading diagram, parts and functions. 4.4 Buttonhole and button stitch- Threading diagram, parts and functions. 4.5 Feed of the arm – Threading diagram, parts and functions. 4.6 Bar tack machine- Threading diagram, parts and functions.	**CO3, CO4**
TSO 5a. Identify relevant work-aids for the given seams. *TSO 5b.* Choose relevant attachment for the given sewing operation with justification. *TSO 5c.* Describe with sketches the procedure to use the given type of attachment.	**Unit-5.0 Work-aids and Attachments** 5.1 Work-aids and attachments- Definition and advantages. 5.2 Work-aids and attachments of sewing machine- Rollers, Guides, Folders, modified presser, feet, Hemmer. 5.3 Placket making, Pocket making attachments. 5.4 Collar turning machine.	**CO5**
TSO 6a. Describe with sketches the procedure to use the given type of attachment. *TSO 6b.* Choose relevant fusing method for the given situation with justification. *TSO 6c. Choose* relevant pressing parameters for the given type of garment(s) with justification. *TSO 6d.* Choose relevant pressing equipment for the given type of garment(s) with justification.	**Unit-6.0 Fusing and Pressing** 6.1 Fusing: Concept, Objectives and Requirements; Types – Fabrics used and Resins; Methods of application of resin; Requirements – Time, Temperature, Pressure; Equipment- Electric Iron, movable flat beds, conveyor fusing machine. 6.2 Pressing: Terms – Under, Moulding, Top pressing; Types- Dry, steam, high pressure steam, Accessories- Ironing board, Sleeve board, Bucks; Equipment- Mechanical, vacuum press, steam air mixture, steam tunnel.	**CO6**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: (Not Applicable)

L) **Suggested Term Work and Self Learning: S2452403** 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.

1. Prepare flow process cart for ten different garments.
2. Prepare marker plan for bulk cutting of the different type of materials.
3. Collect specifications of cutting tools for garments.
4. List different cutting defects and suggest remedial actions.

b. Micro Projects:

1. Collect different types of needles. Prepare a collage with labeling of the parts. State specific use of Needles.
2. Make a collage of different types of stitches and threading diagrams.
3. List various operations for preventive maintenance of collar turning machine.

c. Other Activities:

1. Seminar Topics:
   - New trends in Sewing Machines.
   - Efficient Pressing and Fusing.
   - Latest technology in press machines.
2. Visits: Visit nearby sewing machine shop and study different machines available.
3. Self-learning topics:
   - Laser cutting of garments.
   - Flat lock machine.
   - Conveyor fusing machine.
   - Vacuum Press

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%	15%	15%	-	-	-	-
CO-2	10%	17%	10%	25%	-	-	-
CO-3	15%	35%	15%	25%	33%	-	-
CO-4	30%	17%	30%	25%	33%	-	-
CO-5	30%	16%	30%	25%	34%	-	-
Total Marks	**30**	**70**	**20**	**20**	**10**	-	-
			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 (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Marker Planning and Spreading	7	CO1	10	3	4	3
Unit-2.0 Cutting and Cutting Tools	7	CO2	12	3	2	7
Unit-3.0 Sewing Needles	10	CO3	12	5	2	5
Unit-4.0 Sewing Machines	10	CO3	12	3	4	5
Unit-5.0 Work-aids and Attachments	6	CO4	12	3	4	5
Unit-6.0 Fusing and Pressing	8	CO5	12	3	4	5
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 AssessmentTable for Laboratory (Practical): (Not Applicable)

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: (Not Applicable)

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	The Technology of clothing Manufacture.	Harold Carr and Barbara Latham	Om book Service, England ISBN-978-1405161985
2.	Stitches and Seams	R. M. Laing and Webster J.	Manchester, England ISBN-9781870812733
3.	Sewing for Apparel Industry	Shaeffer Claire	Prentice Hall, New Jersey, USA ISBN-9780131884434
4.	Sewing Lingerie	The Editors	Cy De cosse Incorporated (1991) ISBN 13: 9780865732605

(b) Online Educational Resources:

1. https://www.youtube.com/watch?v=M98qT_lzO6Y
2. https://www.youtube.com/watch?v=uCrzvnN8SUA
3. https://www.youtube.com/watch?v=6js209Uow_s
4. https://www.youtube.com/watch?v=97vTdCxBaQ0
5. https://www.youtube.com/watch?v=QXvxQ2GC1Fo
6. https://www.youtube.com/watch?v=oD_KpZm7OaM

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A) Course Code : **2452406/P2452406/S2452406)**

B) Course Title : CAD in Garment Technology

C) Pre- requisite Course(s) : Computers Graphics for Garment Manufacturing and Garment Manufacturing Process

D) Rationale :

CAD is a boon in the garment industry, it is a software that gives Textile and Fashion designers a virtual representation of the garments they design. CAD is used to achieve higher productivity and efficiency in the garment industry, along with improved quality of designs. This course gives hands on experience to the students to use the right computer tools useful to create prints, textures and weaves. The course also facilitates the students in preparing faster spec sheets and patterns. The students can comfortably with ease do grading of sizes and prepare the marker plans accordingly.

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 CAD Software to create textile Motifs with different color combinations.

CO-2 Design and drape various silhouettes using relevant computer software.

CO-3 Build detailed specification sheets using relevant computer software.

CO-4 Draft and grade patterns using relevant computer software.

CO-5 Develop marker plans for mass production and generate its report.

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	1		2	1	-		1		
CO-2	3	-	3	2	-	-	1		
CO-3	3	-	-	2	-	-	2		
CO-4	2	1	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	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	**2452406**	CAD in Garment Technology	-	-	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	**2452406**	CAD in Garment Technology	-	-	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-1.0 Introduction to CAD and Textile Designing.** 1.1 Significance of CAD 1.2 Advantages of CAD to textile and fashion designers. 1.3 Essential Fashion Designing Software. 1.4 Basic Designing of Fabrics and colour rendering: Using Adobe Illustrator Designing of Repeats Full drop and ½ drop repeats. 1.5 Geometric prints: Checks, stripes -plaids, polka dots etc 1.6 Floral prints one directional layout and two directional layout 1.7 Nursery prints and tossed layout	**CO 1**
----------	**Unit– 2.0 Fashion Illustrations (Reach Fashion Studio)** 2.1 Menu Bar, Tools, Layers and Library. 2.2 Edit Studio: Design Fashion Silhouettes. (Male and Female) 2.3 Create Textures/ shading, prints and Garment Layer on draped garments. 2.4 Edit canvas, extracting jpeg file, draping edit colour of the garments, fill colour, pick colour.	**CO1, CO2**
----------	**Unit– 3.0 Specification Sheets (Reach Fashion Studio)** 3.1 Flat garment sketching: coordinate and big cross lines for guidance, line types, darts, pleats, seams, pockets, etc. (Jeans/ pleated skirt/ cargo shorts/ bush shirt) 3.2 Creating Measurement charts /import measurement chart from excel 3.3 Description of accessories and trims, using various symbols 3.4 Specification chart detailing, colour and texture option etc	**CO2 CO3**
----------	**Unit– 4.0 Pattern Making and Grading (Reach Cad)** 4.1 Pattern Making: File menu bar, Standard Tool bar, Edit Menu and working area, Set up (sizes and units) / Block Method Pattern 4.2 Front and Baack Tracing, save Tracings 4.3 Cut Patterns (yoke) 4.4 Grading: point grading, copy grading (back), open back, duplicate patterns, add seams etc. 4.5 Pattern Making and Grading of any 4 types	**CO3, CO4**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	of garments	
----------	**Unit–5.0 Marker Planning (Reach Cad)** 5.1 Marker Tool Bar, File Tool Bar 5.2 Piece Tool Bar- Number of Parts, Ratio of sizes 5.3 Maker Plan: Manual Placement Method 5.4 Auto Nest 5.5 Marker Report – Generate Report/ Print / Email 5.6 Planning a marker for different combination of garments and sizes for mass production.	**CO5**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452406

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSOs 1.1 Identify the Adobe Illustrator Tools for Logo Creation. (Direct Selection Tool, Shape Tool etc) LSOs 1.2 Import the images / clipart from the library. LSOs 1.3 Use colour fill options LSOs 1.4 Design; logos as per the required specifications of the clients.	1	Design a Logo of the given size using appropriate color harmony	**CO1**
LSOs 2.1 Identify necessary adobe illustrator tools for creating motifs LSOs 2.2 Use the manual method to make full drop repeat patterns in exact size	2	Design 3 Textile Motifs (Floral, Geometric and Nursery) on your worksheet using Adobe Illustrator and Create a full drop repeat print using motifs from the library	**CO1**
LSOs 3.1 Identify necessary adobe illustrator tools for creating half drop repeat LSOs 3.2 Use the tools to create the half drop repeat. LSOs 3.3 Apply the complimentary colour scheme to create the repeat pattern LSOs 3.4 Distinguish between full drop and half drop repeats	3.	Create a half drop floral repeat print using complimentary colours	**CO1**
LSOs 4.1 Identify the tools of adobe illustrator to create seamless gingham pattern, triangle mosaic print and polka dots LSOs 4.2Use the specific tools like formula for gingham pattern to change the colours and make the gingham print LSOs 4.3 Use the tools for creating abstract print and polka dots print.	4.	Create 3 types of geometric prints: use colours of your choice 1. Draw Triangles and place them in abstract form 2. Plaid texture print 3. and polka dots print	**CO1**
LSOs 5.1 Identify the adobe illustrator tools for seamless pattern creation. LSOs 5.2 Use tools like elements, editing, repositioning elements changing background colours etc LSOs 5.3 Create one directional and 2 directional prints with different colour harmony.	5.	Design the following layouts: 1. One directional floral print for summer wear in warm colors. 2. Transform the one directional above motif into 2 directional floral print.	**CO1**

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSOs 6.1 Identify tools needed to design apparels on the female silhouettes (Reach fashion Studio) LSOs 6.2 Use the tools from edit studio, edit texture and print. LSOs 6.3 Design different textures and printed garments on female silhouettes using different colour harmony	6.	Design for a female silhouette: 1. A denim Jeans and plaid shirt in achromatic color harmony. 2. A floral printed skirt and lace top in colors of your choice.	**CO1, CO2**
LSOs 7.1 Identify tools needed to design apparels on the male silhouettes (Reach Fashion Studio) LSOs 7.2 Use the tools from edit studio, edit texture and print. LSOs 7.3 Design different textures and printed garments on male silhouettes using different colour harmony	7.	Design an Indian wear for a male silhouette using bright colors. Create appropriate prints/ textures for the garment.	**CO1, CO2**
LSOs 8.1. Identify the tools needed to change the look of the draped costumes (Reach Fashion Studio) LSOs 8.2 Use the edit canvas, import jpeg file, use draping tool change colour, texture and print of the garment on the model. LSOs 8.3 Produce and Propose various texture, fabrics and colour combinations to clients in a short time	8.	Change the texture/ print and color of the garments on the picture of the models.	**CO2**
LSOs 9.1 Identify the tools needed for illustrating flat sketches (Reach Fashion Studio) LSOs 9.2 Use the tools like line types, table measurements, textures etc LSOs 9.3 Develop a detailed spec sheet for the buyer	9.	a. Illustrate a flat sketch of blue denim jeans (Front and Back) with all minute details like pockets, stitch lines, buttons etc. b. Make a detailed specification sheet for the same showing: 1. Measurement Chart for all sizes 2. Stitching details/ symbols 3. Add comments if needed.	**CO1, CO2, CO3**
LSOs 10.1 Identify the tools needed for spec sheets (Reach Fashion Studio) LSOs 10.2 Use the tools like line types, table measurements, textures etc LSOs 10.3 Develop a detailed spec sheet for the buyer	10.	Make a detailed specification sheet for: 1. men's shirt, fabric type Gingham 100% cotton. 2. Men's cargo shorts	**CO1, CO2, CO3**
LSOs 11.1 Identify the tools (REACH CAD) for drafting basic bodice manually LSOs 11.2 Draft the blocks using measurements, save the patterns for future use.	11.	Draft an easy fitting women's basic bodice block (Front and Back). Save the tracings	**CO2., CO4**
LSOs 12.1 Identify the tools (REACH CAD) for drafting basic bodice LSOs 12.2 Draft the blocks using block method, save the tracings and cut patterns.	12.	Draft patterns of Bush shirt (Front and Back) using Block Method using the given measurements. Save the tracings / cut patterns.	**CO2, CO4**
LSOs 13.1 Identify the tools for pattern making and grading LSOs 13.2 Grade the patterns to the required sizes with the standard measurements	13.	Draft a basic knee length A-line skirt with the given measurements of size M Grade it to size L and XL.	**CO2, CO4**
LSOs 141. Import the patterns from the library LSOs 14.2 Grade the patterns	14.	Import the saved pattern blocks of basic bodice and bush shirt and grade it.	**CO2, CO4**
LSOs 15.1 Draft men's trousers LSOs 15.2 Grade the trousers to various sizes	15.	Draft a formal Mens Trousers of size L. Grade it to size XL and XXL	**CO2, CO4**

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSOs 16.1 identify the tools for marker planning LSOs 16.2 Use the tools like piece bar, file tool bar etc LSOs 16.3 Develop a maker plan using the manual method	16.	Prepare a Marker Plan for the above graded blocks (Pr no 12,13 and 14) on 2 way printed fabric. Using the manual method.	**CO2, CO4, CO5**
LSOs 17.1 Develop a marker plan in auto nest method LSOs 17.2 Generate the report LSOs 17.3 Print the report	17.	Prepare a Marker Plan for the above graded blocks (Pr. 14 and 15) on a plain fabric using the Auto Nest method. Generate the Report and Print it.	**CO2, CO4, CO5**

L) **Suggested Term Work and Self Learning: S2452406** 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.

1. In teams discuss and prepare a list of advantages od CAD to a textile/ fashion designer.
2. Make a visit to the library/ explore the internet and prepare a list of different types of CAD software available in the market for textile designers.
3. Collect ready specification sheets from 5 different garments and understand its detailing. Study minutely.
4. Prepare a collage of various garment drafts and grades of at least 3 sizes each.
5. In teams a prepare marker for your team manually as well as using the CAD software and compare.

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. Market survey and collecting of fabric swatches for recent prints/ motifs. Prepare a mini catalogue for a specified end use of the product and give brief description and salient features of the same.
2. Visit nearby historical monuments to take inspiration for designing prints and garments.
3. Create mood boards using CAD based on themes.
4. Develop computerized design samples with specification tables provided by any garment export house or garment factory.
5. Draft, Grade and prepare a marker plan for no.3
6. Create a portfolio showcasing their work on motifs, prints, garment designs with specification charts and patterns.

c. Other Activities:

1. Seminar Topics: Recent developments in the CAD in Garment Technology
2. Visits: Visit a garment factory using CAD in their production line.
3. Case Study: Identify different computer aided software used in the garment industry.
4. Download videos related to CAD in garment field.
5. Taking Custom Orders for learn and earn activity.

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)**		Sessional Work Assessment (SWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Sessional Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	-	-	20%	10%	25%	10%	20%
CO-2	-	-	20%	10%	25%	20%	20%
CO-3	-	-	20%	25%	25%	20%	20%
CO-4	-	-	20%	15%	25%	20%	20%
CO-5	-	-	20%	40%	--	30%	20%
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)

Note: This course has only practical sessions hence at the end of the semester only PLA and ELA will be conducted by the teacher.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Design a Logo of the given size using appropriate color harmony	CO1	40	40	20
2.	Design 3 Textile Motifs (Floral, Geometric and Nursery) on your worksheet using Adobe Illustrator and Create a full drop repeat print using motifs from the library	CO1	40	40	20
3.	Create a half drop floral repeat print using complimentary colours	CO1	40	40	20
4.	Create 3 types of geometric prints: use colours of your choice	CO1	40	40	20
5.	Design the following layouts: One directional and 2 Directional	CO1	40	40	20
6.	Design for a female silhouette garment with different textures and prints	CO1, CO2	40	40	20

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
7.	Design an Indian wear for a male silhouette using bright colors. Create appropriate prints/ textures for the garment	CO1, CO2	40	40	20
8.	Change the texture/ print and color of the garments on the picture of the models	CO2	40	40	20
9.	Illustrate flat sketches and preparing of detailed spec sheets of denim jeans	CO1, CO2, CO3	40	40	20
10.	Illustrate flat sketches and preparing of detailed spec sheets of men's Shirt and cargo shorts	CO1, CO2, CO3	40	40	20
11.	Draft a women's basic bodice block	CO2, CO4	40	40	20
12.	Draft a bush shirt using block method	CO2, CO4	40	40	20
13.	Draft a Aline skirt and grade it to given sizes	CO2, CO4		40	20
14.	Import the saved pattern blocks of basic bodice and bush shirt and grade it.	CO2, CO4	40	40	20
15.	Draft a formal Mens Trousers of size L. Grade it to size XL and XXL	CO2, CO4	40	40	20
16.	Prepare a Marker plan using Manual method	CO2, CO4, CO5	40	40	20
17.	Prepare a marker plan using Auto nest, Generate and print report	CO2, CO4, 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.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
1.	Computer System with latest configuration to support software as in serial no 2,3, and 4	Minimum System requirement for best CAD performance: OS – Windows 10 or 11 ,64-bit professional version Processor – 2.4 GHz Intel or AMD or #.2 GHz Intel i7 or Xeon E3 Memory – 8GB to 32 GB Storage – SSD 4GB to 8GB	all experiments
2.	Adobe Illustrator		1,2,3,4,5
3.	Reach Software (CAD Software can Vary as per each ones requirements Lectra, Rich Peace, Tukatech, Gerber etc)	Reach Fashion Studio Software Composites PDS Reach Software Reach composites Nester	6,7,8,9,10,11,12,13, 14,15,16,17
4.	Printer		16,17
5.	Scanner		Can be used if needed

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Watson's Textile Design and Colour: Elementary Weaves and Figured Fabrics	Grosicki, Z	Wood Head Publishing ISBN: 978-1855739956
2.	Computer Aided Textile Designing and Clothing	Dr. Shalini Patwardhan	**Colour Publications Pvt. Ltd.**
3.	Adobe Photoshop for Textile Design	Fredrick L. Chipkin	Origin Inc. ISBN: 978-0972731706
4.	CAD in Clothing and Textiles	Winifred, Aldrich	John Wiley and Sons ISBN:978-0632038930
5.	Photoshop and Illustrator For Fashion And Textile Design	Joanne Sherrow	Fair Child Books, Bloomsbury ISBN: 978-1609018351
6.	Computer Aided Pattern Design and Product Development	Alison Beazley, Terry Bond	Wiley – Blackwell ISBN: 978-1405102834
7.	A Textbook Of Computer Aided Apparel Fashion Designing and Production Pattern Making	Meenu Srivastava	Himanshu Publications ISBN:978-8179062517
8.	Concepts Of Pattern Grading Techniques for Manual and Computer Grading	Kathy K. Mullet	Bloomsbury ISBN: **978-1628922325**
9.	Metric Pattern Cutting For Womens Wear	Aldrich, Winifred	Wiley, Blackwell ISBN: 978-8126548415
10.	Metric Patter Cutting For Mens Wear	Aldrich, Winifred	John Wiley and Sons ISBN: 978-0632041138
11.	Fashion Computing: Design Techniques and CAD (Fashion Design Series)	Burke, Sandra	Burke Publishing ISBN:978-0958239134

(b) Online Educational Resources:

1. https://www.designersnexus.com/fashion-design-industry-information/adobe-illustrator-photoshop-fashion-design/
2. https://researchguides.austincc.edu/fashiondesign/oer
3. https://www.classcentral.com/subject/adobe-illustrator
4. https://textilelearner.net/computer-aided-fashion-designing/
5. https://www.edx.org/course/designing-for-textiles

Note: Teachers are requested to check the creative commons licence status/ financial implications of the suggested OER, before use by the students.

(c) Others:

- Learning Packages

1) https://www.lectra.com/en
2) https://tukatech.com/cad-fashion-design-software/
3) https://reach-tech.com/garment-pattern-cad-software.html
4) https://helpx.adobe.com/in/photoshop/how-to/textile-design.html
5) https://www.edx.org/course/designing-for-textiles
6) https://www.edx.org/learn/fashion
7) https://study.com/academy/lesson/how-is-cad-cam-used-in-textiles.html

- Lab Manuals

1) https://www.ttf.unizg.hr/en/laboratory-for-cad-cam-system-for-textile-and-clothing-design-and-clothing-construction-preparation/132
2) http://www-cvr.ai.uiuc.edu/Teaching/ece470/docs/ROS_LabManual.pdf

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A) Course Code : 2452404/T2452404/P2452404/S2452404)

B) Course Title : Advanced Garment Manufacturing

C) Pre- requisite Course(s) : Garment Manufacturing Process

D) Rationale :

Garment manufacturing is today a highly sophisticated systematic process & a student needs to learn the process, systems & techniques to be able to work efficiently in the industry. Students today need to be able to prepare layouts, work in batches, & plan production in a way to eliminate problems & have a smooth flow of production from raw material to finished product. The course helps them classify garments, take up different type of orders including job work, prepare samples as well as produce as per buyer's specifications.

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 Design appropriate garments for different purposes.
CO-2 Recommend suitable manufacturing systems.
CO-3 Plan operations of garment manufacturing plant.
CO-4 Organize stores and quality operations in garment manufacturing plant.
CO-5 Produce garments in an Industry, efficiently.

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/ Developmentof 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		
CO-2	3	3	2	-	1	2	3		
CO-3	3	3	3	-	2	-	2		
CO-4	2	2	-	-	-	-	2		
CO-5	3	2	2	-	1	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	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	**2452404**	Advanced Garment Manufacturing	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.

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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	**2452404**	Advanced Garment Manufacturing	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), 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: T2452404

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Classify garments by different methods. *TSO 1b.* Differentiate between the variety of available garments. *TSO 1c.* Plan the production runs. *TSO 1d.* Design according to age group, Occasion & activity *TSO 1e.* Design garments suitable to the seasons *TSO 1f.* Decide the fabric content based on how close the garment is to the body	**Unit 1 -Classification of Garments** Classification based on; 1.1 Construction- Woven & Knit garments. Other constructions. 1.2 Production- Ready to wear, made to order. 1.3 Production run- Semi styled, styled and fashion garments. 1.4 Occasion- Casual wear, formal wear, semi-formal wear. 1.5 Occasional wear, loungewear, sportswear and uniforms. 1.6 Age- Infant, children, teenage, adult and old age garments. 1.7 Gender- Men's wear, women's wear, unisex garments. 1.8 Seasons- Spring, summer, autumn, rain and winter wear. 1.9 Closeness to body- Underwear, Innerwear, outwears.	**CO1**
TSO 2a. Differentiate between merchant, manufacturer & job worker. *TSO 2b.* Plan a factory depending on whether it is manufacturing or job work unit. *TSO 2c.* Scrutinize the orders for suitability of job work or a batch. *TSO 2d.* Examine the needs of an MSME as well as large-scale industry. *TSO 2e.* Set the time required for a particular job. *TSO 2f.* Reward those who are producing better than average work. *TSO 2g.* Train & bring on par those workers who are producing less than average work. *TSO 2h.* Arrange machinery as per suitability for production. *TSO 2i.* Decide suitability whether product or process layout. *TSO 2j.* Re arrange machinery & equipment to facilitate maximum production *TSO 2k.* Distinguish between knitwear & woven industry. *TSO 2l.* Propose machinery required as per the need in production	**Unit-2.0 Manufacturing Systems** 2.1 Understanding of merchant, manufacturer, and job worker. 2.2 Types of Job work orders 2.3 Manufacturing units and job work units. 2.4 Batch work and Piece work. Advantages and disadvantages. 2.5 MSME & Large-scale production. Comparison with Advantages & Disadvantages 2.6 Work study- Time and motion study. 2.7 Layouts- Product, Process & fixed layouts. 2.8 Layout of a line in a batch system for a formal shirt/any other garment 2.9 Layout of a Garment factory- Difference in the layout of a woven and knit factory.	**CO2, CO3, CO5**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 3a. Contrive the functions of manufacturer. *TSO 3b.* Analyze if some order needs to be concentrated. *TSO 3c.* Prepare a block planning chart to give a macro plan of orders in hand. *TSO 3d.* Plan marketing strategies. *TSO 3e.* Select the channels of distribution as per the reach & feasibility. *TSO 3f.* Plan a budget. *TSO 3g.* Find out labor cost with formula (Salary/#of working days=salary per day/# of working hrs =Salary per hour multiplied or divided by time taken) *TSO 3h.* Cost a garment	**Unit-3.0 Office** 3.1 Furniture, Machinery & equipment & Personnel in an office 3.2 Operations department: Functions of manufacturer. 3.3 Personnel in an office. 3.4 Order concentration 3.5 Block planning 3.6 Production planning charts. 3.7 Marketing Section: Activities of marketing. 3.8 Channels of sales promotion 3.9 Finance section: Budgeting, operational costs 3.10 Direct & indirect material cost 3.11 CMT/labor cost, 3.12 Garment costing.	**CO2, CO4, CO5**
TSO 4a. Produce different types of samples. *TSO 4b.* Prepare chart for stock level orders. *TSO 4c.* Test raw materials for strength & durability *TSO 4d.* Inventory control *TSO 4e.* Inspect raw material as per buyer's specifications. *TSO 4f.* Inspect Raw material. *TSO 4g.* Detect mistakes.	**Unit 4.0-Sampling & Stores & Purchase Section** 4.1 Sampling section/Design section: working and importance of a design section. Types of samples- Regular, Actual, Dummy, Sealer, Size set and Production samples. 4.2 Stores and Purchase: Duties of a storekeeper. Three main duties of receiving, storing, and issuing. Stock level orders: speculative buying. 4.3 Study of Inventories in store- Raw material, supplies, goods in process, finished goods, rejects, surplus goods. 4.4 Study of raw materials like fabric, button, thread, interlining including fusing, wadding, lace, braids, elastic, Velcro, shoulder pads, eyelets & lace, zip fasteners & labels. Stores and purchase chart, order form/purchase order.	**CO2, CO3. CO 4, CO5**
TSO 5a. Distinguish between 1 way & 2-way fabrics. TSO 5b. Plan a marker. TSO 5c. Prepare a marker. TSO 5d. Reproduce a marker. TSO 5e. Plan a marker for same garment using 2 methods of spreading- flat & stepped. TSO5f. Differentiate between manual, machine, die pressed & computerized cutting. TSO5g. Decide best method of cutting. TSO5g. Prepare cutting room planning chart. TSO5h. Construct garments using different stitching methods. TSO 5i. Work in a mechanized environment.	**Unit-5.0 Production Department** 5.1 Cutting Section: Cutting principles, production process in the cutting room. One way & 2 way cutting, Planning, Drawing and Reproduction of a marker. Spreading- Manual, machine & computerized. Flat and stepped spread. Cutting- Manual, machine, die pressed and computerized. 4.1.1 Preparation for sewing- shade marking, numbering, ticketing, bundling. Cutting with machines- 5.2 Cutting room planning chart. 5.3 Stitching section Stitching by hand, sewing machines, mechanized workplaces.	**CO2, CO 3, CO5**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 5j. Operate/ Design a UPS system. TSO 5 K Operate/ Design a QR system. TSO 5l. Check Quality in Finishing TSO 5 m. Pack by various methods TSO 5n Prepare packing lists. TSO 5 o. Operate various Pressing machines. TSO 5 p. Differentiate between different washes TSO5q. Decide machinery required for different washing effects TSO 5r Adopt best methods to get the desired effects.	5.4 Mechanized machines: Chutes, trolleys. 5.4.1 straight line conveyor belts 5.4.2 Progressive/ synchro flow conveyors 5.4.3 UPS & QRS. 5.5 Finishing & Packing Section 5.6 Trimming, Ironing & quality control in Finishing. 5.7 Packing- Flat pack, semi stand pack & stand pack. Hanger packs, 5.8 Packing materials like tags, inner cartons, outer cartons, and poly bags. 5.9 Packing lists. 5.10 Machines: Buttoning machine, buttonhole machine. 5.11 Pressing machines – irons, steam press, carousel under press, steam dolly, tunnel fiches, 5.12 Washing machines for industrial garment wash.	

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452404

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
Organize 3 operators on 3 machines *LSO 1.1.* Show stitching of one article/garment by different methods *LSO 1.2.* Describe process of operation *LSO 1.3.* Measure time taken by all 3 for the same operation *LSO 1.4.* Compare the quality of product by each method *LSO 1.1.* Adopt the best method	01.	Simulate Motion study	CO2
LSO 2.1. Organize 3 operators on 3 machines LSO 2.2. Show stitching of one article/garment by same method LSO 2.3. Describe process of operation LSO 2.4. Measure time taken by all 3 for the same operation LSO 2.5. Estimate average time LSO 2.6. Set the time	02.	Simulate Time study	CO2
LSO 3.1. Plan the operations required to produce any garment. LSO 3.2. Decide the machinery required. LSO 3.3. Prepare a layout in a way that raw material loaded at back of line becomes product in front.	03.	Prepare Product Layout	CO2

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 4.1. Plan the operations required to produce any garment. LSO 4.2. Decide the machinery required. LSO 4.3. Plan layout in such a way that all machines doing same operation are together LSO 4.1. Draw arrows for route.	04.	Prepare Process Layout	CO2
LSO 5.1. Plan the operations required to produce a formal shirt/ any garment. LSO 5.2. Decide the machinery required. LSO 5.3 Prepare layout of a line in a batch system LSO 5.4. Draw arrows to show flow of work.	05.	Prepare Layout of a line in a batch system	CO2
LSO 6.1. Identify layout requirements for woven garment factory LSO 6.2 Arrange spaces as required differently for woven factory LSO 6.3 Show entrance & Exit	06.	Prepare Layout of a factory- woven	CO2, CO3
LSO 7.1 Identify layout requirements for Knit garment factory LSO 7.2 Arrange spaces as required differently for Knit factory, LSO 7.3 Show entrance & Exit	07.	Prepare Layout of a factory- knit	CO2, CO3
LSO 8.1 Compare the machinery & furniture required for woven & Knit garments LSO 8.2 Differentiate between layout requirements for woven & knit garments, LSO 8.3 Arrange spaces as required differently for woven & knit garment factories along with machinery & furniture LSO 8.4 Show entrance & Exit	08.	Distinguish between woven & knit garment factories with machinery & furniture	CO2, CO3
LSO 9.1 Compare Income to Expenditure LSO 9.2 Manage finances LSO 9.3 Spend within income LSO 9.4 Save from profit LSO 9.5 Reduce Cost	09.	Prepare Budget	CO4
LSO 10.1 Calculate labor cost LSO 10.2 Cost of making with trims LSO 10.3 Apply formula (Salary/Number of working days=Salary per day/number of working hours=salary per hour x time taken)	10.	Calculate CMT	CO4
LSO 11.1 Cost a full garment LSO 11.2 Apply formula (Raw Material+ Labor + Over heads+ Depreciation +Profit=Selling price) LSO 11.3 Revise to reduce costs LSO 11.4 Fix profit margins for manufacturer, agent, Retailer, wholesaler, designer, etc.	11.	Calculate Garment Cost	CO4

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 12.1 Scrutinize orders to see if they can be clubbed together LSO 12.2 Organize orders as per date of delivery LSO 12.3 Plan fabric & other raw materials LSO 12.4 Prepare a Order Concentration chart	12	Prepare Order concentration	CO2, CO4, CO5
LSO 13.1 Classify fabrics into woven, Knit & others LSO 13.2 Distinguish between woven & printed fabrics LSO 13.3 Differentiate between yarn dyed & dyed fabrics LSO 13.4 identify the different knit fabrics available LSO 13.5 Discover other types of fabric constructions	13	Collect Swatches of raw materials – Fabric- Woven, Knit & other construction,	CO5
LSO 14.1 Classify buttons as per material used such as plastic, metal, bone, shell, horn & pearl LSO 14.2 Propose the button size for each garment as suitable LSO 14.3 Calculate button requirements in Gross LSO 14.4 Distinguish between woven & knit lace LSO 14.5 Differentiate between cotton & nylon lace LSO 14.6 Experiment with lace & braids in garments LSO 14.7 Calculate the requirement of elastic LSO 14.8 Distinguish between woven & knit elastic LSO 14.9 Incorporate eyelets & lace in garment design LSO 14.10 Check the sizes available LSO 14.11 Discover the different interlinings available LSO 14.12 Probe the advantages of using fusible interlining compared to non fusible LSO 14.13 Recommend the use of Velcro for different garments LSO 14.14 Recommend shoulder pads where required as per available sizes & shapes LSO 14.15 Customize shoulder pads as per need LSO 14.16 Discover the varieties of zippers available like plastic, metal, continuous, made to size, etc LSO 14.17 Adapt zippers in the designs as suitable	14	Collect Swatches of raw materials- Buttons, Thread, Lace, Braid, Elastic, eyelets & lace. Interlining, Velcro, shoulder pad, zipper.	CO5
LSO 15.1 Prioritize orders in hand as per delivery dates LSO 15.2 Plan production based on power loom or mill made fabrics LSO 15.3 Plan production based on batch capacities LSO 15.4 Formulate plans to complete orders on	15	Prepare Block Planning Chart	CO2, CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
time LSO 15.5 Prepare block plans for a month or season as required			
LSO 16.1 Plan purchase of raw materials as per orders LSO 16.2 Re Arrange stores in order to stock raw materials in a systematic manner LSO 16.3 Check raw materials for any flaws LSO 16.4 Issue of raw materials as needed	16	Stores planning chart	CO2, CO4, CO5
LSO 17.1 Inquire with each department what supplies they need to stock LSO 17.2 Prepare a list of raw materials & supplies that need to be stocked	17	Prepare chart for stock level orders	CO2, CO4, CO5
LS0 18.1 Calculate the raw material requirement for each order LS0 18.1 Calculate in units as required for each. Eg Fabric in meters, Buttons in gross, etc. LSO 18.2 List the suppliers for the same	18	Prepare Purchase planning chart	CO2, CO4, CO5
LS0 19.1 Calculate the raw material requirement for each order in units as required. LSO 19.2 Check availability of the same in stores LSO 19.3 Prepare requisition chart & submit to storekeeper	19	Prepare Material requisition chart	CO2, CO4, CO5
LS0 20.1 Calculate the raw material requirement in units as required for each order. LSO 20.2 Check availability of the same in stores LSO 20.3 List items that are not available in stores & need to be purchased LSO 20.4 Prepare a requisition chart & submit to purchase department. LS0 20.5 Ask for Quotations	20	Prepare Purchase requisition chart	CO2, CO4, CO5
LS0 21.1 Plan fabric delivery based on whether power loom, mill made or handloom LSO 21.2. Plan production based on capacities of Cutting, stitching, finishing & packing sections. LSO 21.3 Plan inspection date LSO 21.4 Conclude a date possible for delivery	21	Prepare Production planning charts (Simple with same production capacity)	CO2, CO4, CO5
LS0 22.1 Plan fabric delivery based on whether power loom, mill made or handloom LSO 22.2. Plan production based on capacities of Cutting, stitching, finishing & packing sections. LSO 22.3 Scrutinize the dates if overlapping due to different capacities LSO 22.4 Plan inspection date LSO 22.5 Conclude a date possible for delivery	22	Production planning chart Complicated with different production capacities	CO2, CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LS0 23.1 Calculate the requirement in each size in the ratio as required LSO 23.2 Issue an Order form with an order number & date LS0 23.3 Calculate the amount to be paid based on rate & quantities LSO 23. 4 Mention important terms like delivery date & place, payment terms, etc LS0 23.5 Take signature from the concerned authority with company seal before issuing	23	Prepare Order form	CO2, CO4, CO5
LS0 24.1 Plan fabric requirement with 05% extra LSO 24.2. Arrange patterns & make a marker plan. LSO 24.3 Calculate number of pieces to be cut based on size ratio along with 2 % extra	24	Plan Cutting room planning chart	CO2, CO4, CO5
LS0 25.1 Prepare patterns for 1 garment LSO 25.2. Plan marker based on flat spreading method. LSO 25.3. Plan marker based on stepped spreading method. LSO 25.4. Adopt the method taking minimum fabric.	25	Plan a marker (same garment using 2 methods of spreading- flat & stepped)	CO2, CO4, CO5
LS0 26.1 Collect pictures of garment machinery LS0 26.2 Distinguish between the different machines available for garment stitching. LSO 26.2 Check availability of the same in stores, prices of each, their advantages & disadvantages	26	Identify different garment stitching machines	CO2, CO4, CO5
LS0 27.1 Collect pictures of garment cutting machinery LSO 27.2 Distinguish between the different machines available for garment cutting. LSO 27.2 Check availability of the same in stores, ease of operation, prices of each, their advantages & disadvantages	27	Identify different garment Cutting machines	
LS0 28.1 Collect pictures of garment finishing machinery LSO 28.2 Distinguish between the different machines available for Buttoning & Buttonhole machines. LSO 28.2 Check availability of the same in stores, prices of each, their advantages & disadvantages	28	Identify different garment Finishing machine	CO2, CO4, CO5
LS0 29.1 Distinguish between the different washing machines available for different wash effects. LSO 29.2 Check availability of the same in stores, prices of each, their effects & challenges	29	Identify different garment washing machinery	CO2, CO4, CO5
LS0 30.1 Distinguish between the different machines available for ironing.	30.	Identify different garment pressing machines machine	CO2, CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 30.2 Check availability of the same in stores, ease of operation, prices of each, their advantages & disadvantages			
LS0 31.1 Calculate the requirement in each size as per required ratio LSO 31.2 Plan number of pieces that can fit in one carton LSO 31.3 Prepare a chart for each colour LSO 31.4 Calculate the number of cartons required LS0 31.5 calculate the net weight & gross weight of each carton	31.	Prepare Packing list- Colour wise size wise	CO2, CO4, CO5
LS0 32.1 Calculate the requirement in each size as per required ratio. LSO 32.2 Plan number of pieces that can fit in one carton LSO 32.3 Prepare a chart for each colour & each size as per ratio LSO 32. 4 Calculate the cartons required LS0 32.5 Calculate the net weight & gross weight of each carton	32.	Packing list Colour wise Ratio wise	CO2, CO4, CO5

L) Suggested Term Work and Self Learning: S2452404 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.
   1. Take 1 garment & make a product & process layout for the same
   2. Make a layout in a line in a batch for a different garment for each student
   3. Prepare budget for a factory by imaginary income & expenditure

b. Micro Projects:

1. Survey of 1 raw material for each student to be done online & offline.
2. Select 1 garment that can be produced in staple, styled & semi styled production. Show costing & feasibility for the same

c. Other Activities:

1. Seminar Topics:
   - Presentation of survey.

2. Visits: Visit to a garment factory to see the departments, check the operations, machinery & flow of production

3. Self-learning topics:
   - Select 1 garment & fix time & best method by time & motion study
   - Cost 1 garment

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%	15%	15%	15%	-	20%	20%
CO-2	10%	10%	15%	15%	25%	10%	20%
CO-3	25%	15%	20%	20%	15%	15%	20%
CO-4	20%	30%	20%	25%	25%	15%	20%
CO-5	30%	30%	30%	25%	35%	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 (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Classification of Garments	10	CO1	10	2	3	5
Unit-2.0 Manufacturing Systems	8	CO2, CO3	08	2	3	3
Unit-3.0 Office	8	CO2, CO4	10	2	4	4
Unit-4.0 Sampling & Stores & Purchase Section	08	CO 2, CO3, CO4	21	7	5	9
Unit-5.0 Production Department	14	CO2, CO5	21	7	5	9
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.	Simulate Motion study	CO2	40	40	20
2.	Simulate Time study	CO2	30	60	10
3.	Prepare Product Layout	CO2, CO3	40	50	10
4.	Prepare Process Layout	CO2, CO3	40	50	10
5.	Prepare Layout of a line in a batch system	CO4	50	20	10
6.	Prepare Layout of a factory- woven	CO4	50	20	10
7.	Prepare Layout of a factory- knit	CO4	50	20	10
8.	Distinguish between woven & knit garment factories with machinery & furniture	CO2, CO4, CO5	40	40	20
9.	Prepare Budget	CO5	50	30	20
10.	Calculate CMT	CO5	50	30	20
11.	Calculate Garment Cost	CO5	50	30	20
12.	Prepare Order Concentration	CO2, CO4, CO5	40	40	20
13.	Collect Swatches of raw materials – Fabric- Woven, Knit & other construction,	CO2, CO4, CO5	40	40	20
14.	Collect Swatches of raw materials- Buttons, Thread, Lace, Braid, Elastic, eyelets & lace. Interlining, Velcro, shoulder pad, zipper.	CO2, CO4, CO5	50	40	10
15.	Prepare Block Planning Chart	CO2, CO4, CO5	40	40	20
16.	Stores planning chart	CO2, CO4, CO5	40	40	20
17.	Prepare chart for stock level orders	CO2, CO4, CO5	40	40	20
18.	Prepare Purchase planning chart	CO2, CO4, CO5	50	30	20
19.	Prepare Material requisition chart	CO2, CO4, CO5	50	30	20
20.	Prepare Purchase requisition chart	CO2, CO4, CO5	50	30	20
21.	Prepare Production planning charts (Simple with same production capacity)	CO2, CO4, CO5	50	30	20
22.	Production planning chart Complicated with different production capacities	CO2, CO4, CO5	50	30	20
23.	Prepare Order form	CO2, CO4, CO5	50	30	20

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
24.	Plan Cutting room planning chart	CO2, CO4, CO5	50	30	20
25.	Plan a marker (same garment using 2 methods of spreading- flat & stepped)	CO2, CO4, CO5	50	30	20
26.	Identify different garment stitching machines	CO2, CO4, CO5	50	30	20
27.	Identify different garment Cutting machines	CO2, CO4, CO5	50	30	20
28.	Identify different garment Finishing machine	CO2, CO4, CO5	50	40	10
29.	Identify different garment washing machinery	CO2, CO4, CO5	50	40	10
30.	Identify different garment pressing machines machine	CO5	50	30	20
31.	Prepare Packing list- Colour wise size wise	CO5	50	40	10
32.	Packing list Colour wise Ratio wise	CO5	50	40	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.	Students desks	Solid wood	All
3.	Long cutting tables	Wood 3hx2bx5l	24,25
4	Lock stitch machines for sewing	(Branded Juki/ Brother/ etc)	01,02

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Design of clothing manufacturing processes	Dr Sc Jelka Geršak	Woodhead Publishing, 2nd edition, 2022 ISBN: 978 0 85709 778 1
2.	Apparel Manufacturing Technology	T. Karthik, P. Ganesan, D. Gopalakrishnan	CRC Press, 2017 ISBN: 9781315350509, 1315350505
3.	Automation in Garment Manufacturing	Rajiv Padhye, Rajkishore Nayak	Elsievier Science, 2017 ISBN: 9780081011331, 0081011334
4.	Technology of Clothing Manufacture	Harold Carr & Barbara Lathan	Blackwell Science, 4th edition, 2008 ISBN 10: 9781405161985 ISBN-13: 978-1405161985

(b) Online Educational Resources:

1. https://www.studocu.com/in/document/national-institute-of-fashion-technology/apparel-production/advanced-apparel-manufacturing-management-with-an-example/29095768
2. https://www.aitex.es/advanced-production-techniques-in-garment-making-and-fashion-4-0-tools-and-digital-environments/?lang=en
3. https://katanamrp.com/blog/garment-manufacturing/

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

(c) Others:

1. https://www.slideshare.net/BoobalanS7/advance-apparel-manufacturing-technology
2. https://slideplayer.com/slide/13295333/
3. https://www.academia.edu/35768631/8_Technological_developments_in_Garment_Industry_ptx

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A) Course Code : **2400505(P2400505/S2400505)**

B) Course Title : Entrepreneurship Development & Start-ups
(Common for all Programmes)

C) Pre-requisite Course(s) :

D) Rationale :

A fast-growing economy provides ample opportunities for diploma engineers to succeed in entrepreneurship and start-ups. Start-up ecosystem and Entrepreneurship Development skills are fully developed providing many opportunities to the youths. Diploma engineers can be their own masters and provide jobs to others by starting their service-industry / assembly/marketing/consultancy/manufacturing enterprises. Entrepreneurship requires a distinct set of skills that will be developed in this course. This course aims at developing competencies in the diploma engineer for becoming an intrapreneur, a successful entrepreneur, or a startup Co-Founder. After successfully completing this course students who develop the qualities of a successful entrepreneur can establish their own manufacturing industry/business startup or be self-employed. Those who prefer jobs can become intrapreneurs and share profits with their company.

E) Course Outcomes (COs): After the completion of the course, teachers are expected to ensure the accomplishment of the 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 the classroom/laboratory/workshop/field/industry.

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

CO-1 Demonstrate traits of a successful intrapreneur/ entrepreneur/ start-up co-founder.
CO-2 Innovate products and services using creativity and innovation techniques.
CO-3 Manage critical resources from support institutions.
CO-4 Prepare sustainable small business plans.

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		
CO-2	3	2	3	-	2	3	2		
CO-3	3	3	3	-	2	3	2		
CO-4	3	3	-	-	2	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				
	2400505	Entrepreneurship Development & Startups	-	-	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)	
	2400505	Entrepreneurship Development & Startups	-	-	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: (Not Applicable)

K) Suggested Laboratory (Practical) Session Outcomes (LSOs)and List of Practical: P2400505

Practical/Lab Session Outcomes (LSOs)		S. No.	Laboratory Experiment / Practical Titles	Relevant Cos Number(s)
LSO1.1	Identify the skills of a Successful Entrepreneur.	1.	Profile summary (about 500 words) of a successful entrepreneur indicating milestone achievements.	CO1
LSO1.2	Determine the charms of entrepreneurship and start-ups	2.	Discussion session with your institute's pass-out students who are successful entrepreneurs.	CO1
LSO1.3	Perform strength, weakness, opportunity, and threat analysis.	3.	SWOT analysis to arrive at your business idea of a product/service.	CO1
LSO1.4	Develop sales & marketing skills	4.	Sale of products to different customers	CO1
LSO2.1	Use creativity and put up a stall in a funfair and write a report of profit/loss.	5.	Creativity and Innovation in Business	CO2
LSO2.2	Innovate a point of sale for a product.	6.	Exhibition cum sale of products prepared out of waste.	CO2
LSO2.3	Generate different business opportunities.	7.	Business ideas (product/service) for intrapreneurial and entrepreneurial opportunities through brainstorming.	CO2
LSO1.5	Discover entrepreneurial potential.	8.	Self–assessment test to discover entrepreneurial traits.	CO1
LSO2.4	Classify domain-specific industries on business parameters.	9.	Survey industries (your stream), and grade them according to the level of scale of production, investment, turnover, and pollution to prepare a report on it.	CO1
LSO3.1	Identify entrepreneurship support institutions beneficial for the enterprise.	10.	Compile the information from the government agencies that will help you set up your business enterprise.	CO3
LSO3.2	Select a suitable funding scheme for the enterprise.	11.	Visit a bank / financial institution to enquire about various funding schemes for small-scale enterprises.	CO3
LSO3.3	Analyze the assessment procedure of bank loans.	12.	Collect loan application forms of nationalized banks / other financial institutions.	CO3
LSO3.4	Compute the financial needs of the business enterprise	13.	Compile the information from financial agencies that will help you set up your business enterprise.	CO3
LSO2.5	Select a business opportunity.	14.	Identify the business opportunity suitable for you.	CO2
LSO3.5	Carry-out market survey for a product.	15.	Market Survey for an Enterprise	CO3
LSO4.1	Find out rates of industrial lands and buildings in different industrial areas.	16.	Industrial land and building for Entrepreneurship.	CO4

Practical/Lab Session Outcomes (LSOs)		S. No.	Laboratory Experiment / Practical Titles	Relevant Cos Number(s)
LSO4.2	Craft a vision statement and enabling mission statements for your chosen enterprise.	17.	Vision statement and mission statement for a Startup.	CO4
LSO4.3	Select a suitable name and brand for the business enterprise.	18.	Branding for a product and a Company.	CO4
LSO4.4	Design a logo, letterhead, and visiting card for the business.	19.	Marketing communication for business.	CO4
LSO4.5	Prepare a techno-feasibility report	20.	A techno-feasibility report of a chosen product/service.	CO4
LSO4.6	Prepare a business plan for the enterprise.	21.	Business plan for the enterprise.	CO4
LSO4.7	Develop a website for the business	22.	Online Marketing for Business.	CO4
LSO3.6	Prepare a set of short-term, medium, and long-term goals for starting a chosen small-scale enterprise.	23.	Goal setting for an enterprise.	CO3
LSO3.7	Prepare an advertising campaign for your chosen product/service.	24.	Marketing management for an enterprise.	CO3
LSO3.8	Establish a supply chain network for the enterprise.	25.	Supply Chain Management	CO3
LSO3.9	Establish a Market intelligence mechanism.	26.	Market Intelligence for Entrepreneurship	CO3
LSO4.8	Compile information about various insurance schemes covering different risk factors.	27.	Risks in business	CO4
LSO4.9	Calculate the breakeven point for the business idea chosen by you.	28.	Breakeven point for a business	CO4

L) Suggested Term Work and Self-Learning: S2400505 Some sample suggested assignments, micro-projects, and other activities are mentioned here for reference.

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

i. Prepare a list of successful Entrepreneurs in the city.
ii. Prepare a list of startups in the city.
iii. Prepare a list of the nearest incubators.
iv. Prepare a list of Angel Investors and Venture Capitalists.

i. Choose any product and study its supply chain.
ii. Arrange brainstorming sessions for improvement of any product.
iii. Choose any advertisement and analyse its good and bad points.
iv. Visit industrial exhibitions, trade fairs and observe nitty-gritty of business.
v. Study schemes for entrepreneurship promotion of any bank.

b. Micro Projects:

i. Interview successful entrepreneurs and startup co-founders in the city and innovate their products/services, pricing, packaging, advertisements, propositions, etc.
ii. Identify different entrepreneurship support institutions in the city.
iii. Prepare a collage for specific entrepreneurship development institutions.
iv. Conduct a market survey for a specific product idea.

c. Other Activities:

1. Seminar Topics:

- Charms of entrepreneurship.
- Challenges of entrepreneurship.
- Startup ecosystem in India.
- One district one product scheme
- Setting up of a business.
- Market study of specified business.
- Prepare a business plan for your chosen small scale enterprise.
- Business opportunity suitable for you.

2. **Visits:** Visit DIC, MSME, NSIC, NABARD, KVIC, IDBI, SBI, State Consultancy Organization, Industrial Development Center, Trade Exhibitions, Export Fairs, Trade Shows, etc. Visit nearby tool room/industry and learn to prepare budget of that industry. Also learn to grow low scale business and marketing. Prepare list of advertisement to grow business.

3. Self-learning topics:

- Achievement Motivation.
- Need for achievement.
- Calculated risk.
- CSR (Corporate Social Responsibility)
- MSME Development Institute.
- Marketing their business.
- Growing their business.
- Financial management.
- Dealing with the pressure and stress

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%	15%	15%	-	-	20%	20%
CO-2	10%	10%	10%	25%	-	10%	20%
CO-3	15%	15%	15%	25%	33%	15%	20%
CO-4	30%	30%	30%	25%	33%	15%	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: (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.	Profile summary (about 500 words) of a successful entrepreneur indicating milestone achievements.	CO1	50	40	10
2.	Discussion session with your institute's pass-out students who are successful entrepreneurs.	CO1	50	40	10
3.	SWOT analysis to arrive at your business idea of a product/service.	CO1	50	40	10
4.	Sale of products to different customers	CO1	50	40	10
5.	Creativity and Innovation in Business	CO2	50	40	10
6.	Exhibition cum sale of products prepared out of waste.	CO2	50	40	10
7.	Business ideas (product/service) for intrapreneurial and entrepreneurial opportunities through brainstorming.	CO2	50	40	10
8.	Self–assessment test to discover entrepreneurial traits.	CO1	50	40	10
9.	Survey industries (your stream), and grade them according to the level of scale of production, investment, turnover, and pollution to prepare a report on it.	CO2	50	40	10
10.	Compile the information from the government agencies that will help you set up your business enterprise.	CO3	50	40	10
11.	Visit a bank / financial institution to enquire about various funding schemes for small-scale enterprises.	CO3	50	40	10
12.	Collect loan application forms of nationalized banks / other financial institutions.	CO3	50	40	10
13.	Compile the information from financial agencies that will help you set up your business enterprise.	CO3	50	40	10
14.	Identify the business opportunity suitable for you.	CO2	50	40	10
15.	Market Survey for an Enterprise	CO3	50	40	10
16.	Industrial land and building for Entrepreneurship.	CO4	50	40	10
17.	Vision statement and mission statement for a Startup.	CO4	50	40	10
18.	Branding for a product and a Company.	CO4	50	40	10
19.	Marketing communication for business.	CO4	50	40	10
20.	A techno-feasibility report of a chosen product/service.	CO4	50	40	10
21.	Business plan for the enterprise.	CO4	50	40	10

S. No.	Laboratory Practical Titles	Relevant Cos Number (s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
22.	Online Marketing for Business.	CO4	50	40	10
23.	Goal setting for an enterprise.	CO3	50	40	10
24.	Marketing management for an enterprise.	CO3	50	40	10
25.	Supply Chain Management	CO3	50	40	10
26.	Market Intelligence for Entrepreneurship	CO3	50	40	10
27.	Risks in business	CO4	50	40	10
28.	Breakeven point for a business	CO4	50	40	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 beprepared 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: (Not Applicable)

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Entrepreneurial Development	Khanka S.S. (2006)	S. Chand Publishing, 20068121918014,
2.	Un-Boxing Entrepreneurship Your self-help guide to setup a successful business	Dr. Nishith Dubey Aditya Vyas, AnnuSoman, AnupamSingh, CharulChaturvedi, Praveen Shukla	Indra Publishing House, 2023, ISBN- 978-93-93577-70-2
3.	Skill Development and Entrepreneurship in India	Rameshwari Pandya	Ingram 2016, 8177084186
4.	Production and Operations Management	SV Deshmukh, A K Chitale and Nishith Rajaram Dubey,	Archers & Elevators Publishing House, Bangalore ISBN 9789386501197
5.	Entrepreneurship Development	Sapna Jarial	New India Publishing Agency- Nipa 2022, 9395319240

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
6.	The Entrepreneurial Instinct: How Everyone Has the Innate Ability to Start a Successful Small Business	Monica Mehta	Tata McGraw Hill Education, New Delhi, 2012, ISBN 978-0-07-179742-9
7.	The Learn Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses	Eric Ries	Penguin UK ISBN-978-0670921607
8.	Entrepreneurship and Start-ups	Ekta Sharma	FPH
9.	The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business	Clayton M. Christensen	Harvard business ISBN: 978-142219602

(b) Online Educational Resources:

1. Coir Board http://coirboard.gov.in/
2. National Institute for Micro, Small and Medium Enterprises (ni-msme) https://www.nimsme.org/
3. MSME / Udyam Registration https://udyamregistration.gov.in/Government-India/Ministry-MSME-registration.htm
4. CHAMPIONS https://champions.gov.in/Government-India/Ministry-MSME-Portal-handholding/msme-problem-complaint-welcome.htm
5. Prime Minister Employment Generation Programme and Other Credit Support Schemes https://msme.gov.in/prime-minister-employment-generation-programme-and-other-credit-support-schemes
6. Marketing Promotion Schemes https://msme.gov.in/marketing-promotion-schemes
7. Start-up India https://www.startupindia.gov.in/
8. DPIIT Recognition https://www.startupindia.gov.in/content/sih/en/startup-scheme.html
9. Startup India Seed Fund Scheme https://seedfund.startupindia.gov.in/
10. STARTUP INDIA INVESTOR CONNECT https://investorconnect.startupindia.gov.in/
11. Startup Funding https://www.startupindia.gov.in/content/sih/en/funding.html
12. Women Entrepreneurship in India https://www.startupindia.gov.in/content/sih/en/women_entrepreneurs.html
13. Incubators https://www.startupindia.gov.in/content/sih/en/incubator-framework.html
14. Start-up Mentors https://www.startupindia.gov.in/content/sih/en/search.html?roles=Mentor&page=0
15. NEN https://nen.org/
16. TIE https://tie.org/
17. MoE Innovation Cell https://www.mic.gov.in/
18. https://youtu.be/8iKsZZYv90k
19. https://youtu.be/Tzzfd6168jk
20. https://youtu.be/9-O15gDqebg

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

(c) Others:

******

A) Course Code **: 2400007(T2400007)**

B) Course Title **:** Indian Constitution (Common for all Programmes)

C) Pre- requisite Course(s) **:**

D) Rationale **:**

This course will focus on the basic structure and operative dimensions of Indian Constitution. It will explore various aspects of the Indian political and legal system from a historical perspective highlighting the various events that led to the making of the Indian Constitution. The Constitution of India is the supreme law of India. The document lays down the framework demarcating the fundamental political code, structure, procedures, powers, and sets out fundamental rights, directive principles, and the duties of citizens. The course on constitution of India highlights key features of Indian Constitution that makes the students a responsible citizen. In this online course, we shall make an effort to understand the history of our constitution, the Constituent Assembly, the drafting of the constitution, the preamble of the constitution that defines the destination that we want to reach through our constitution, the fundamental right constitution guarantees through the great rights revolution, the relationship between fundamental rights and fundamental duties, the futurist goals of the constitution as incorporated in directive principles and the relationship between fundamental rights and directive principles.

E) Course Outcomes (COs): After the completion of the course, teachers are expected to ensure the accomplishment of following course out comes 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 List salient features and characteristics of the constitution of India.

CO-2 Follow fundamental rights and duties as responsible citizen and engineer of the country.

CO-3 Analyze major constitutional amendments in the constitution.

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	1	-	-	-	2	-	-		
CO-2	1	-	-	-	2	-	-		
CO-3	1	2	-	-	2	-	1		

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				
	2400007	Indian Constitution	01	-	-	01	01	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)	
	2400007	Indian Constitution	25	-	-	-	-	-	25

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: T2400007

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Explain the meaning of preamble of the constitution. TSO 1b. List the salient features of constitution. TSO 1c. List the characteristics of constitution.	**Unit-1.0 Constitution and Preamble** 1.1 Meaning of the constitution of India. 1.2 Historical perspective of the Constitution of India. 1.3 Salient features and characteristics of the Constitution of India. 1.4 Preamble to the Constitution of India.	**CO1**
TSO 2a. Enlist the fundamental rights. *TSO 2b.* Identify fundamental duties in general and in particular with engineering field. *TSO 2c.* identify situations where directive principles prevail over fundamental rights.	**Unit-2.0 Fundamental Rights and Directive Principles** 2.1 Fundamental Rights under Part-III. 2.2 Fundamental duties and their significance. 2.3 Relevance of Directive Principles of State Policy under part-IV.	**CO2**
TSO 3a. Enlist the constitutional amendments. *TSO 3b.* Analyze the purposes of various amendments.	**Unit-3.0 Governance and Amendments** 3.1 Amendment of the Constitutional Powers and Procedure 3.2 Major Constitutional Amendment procedure - 42nd, 44th, 74th, 76th, 86th and 91st	**CO3**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: (Not Applicable)

L) Suggested Term Work and Self Learning: 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. Role of Media in Spreading Awareness regarding Fundamental Rights
2. Analysis of Situations where directive principle of State policy has prevailed over Fundamental rights
3. Analyze 42nd and 97th Amendment of Indian Constitution

c. Other Activities:

1. Seminar Topics:
   - Democracy and Political Participation in India
   - Situations where directive principles prevail over fundamental rights.
2. Visits:
   - Arrange Mock Parliament.
3. Design games and simulation on emergencies declared in last thirty years.

4. Group discussions on current print articles.
    - Adoption of Article 365 in India.
    - Need of amendments in the constitution.

5. Prepare collage/posters on current constitutional issues.
    - Emergencies declared in India
    - Seven fundamental rights

6. Cases: Suggestive cases for usage in teaching:

Case	Relevance
A.K. Gopalan Case (1950)	SC contented that there was no violation of Fundamental Rights enshrined in Articles 13, 19, 21 and 22 under the provisions of the Preventive Detention Act, if the detention was as per the procedure established by law. Here, the SC took a narrow view of Article 21.
Shankari Prasad Case (1951)	This case dealt with the amendability of Fundamental Rights (the First Amendment's validity was challenged). The SC contended that the Parliament's power to amend under Article 368 also includes the power to amend the Fundamental Rights guaranteed in Part III of the Constitution.
Minerva Mills case (1980)	This case again strengthens the Basic Structure doctrine. The judgement struck down 2 changes made to the Constitution by the 42nd Amendment Act 1976, declaring them to violate the basic structure. The judgement makes it clear that the Constitution, and not the Parliament is supreme.
Maneka Gandhi case (1978)	A main issue in this case was whether the right to go abroad is a part of the Right to Personal Liberty under Article 21. The SC held that it is included in the Right to Personal Liberty. The SC also ruled that the mere existence of an enabling law was not enough to restrain personal liberty. Such a law must also be "just, fair and reasonable."

7. **Self-learning topics:**
    - Parts of the constitution and a brief discussion of each part.
    - Right to education.
    - Right to equality.

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	30%	-	30%	-	-	-	-
CO-2	40%	-	40%	50%	50%	-	-
CO-3	30%		30%	50%	50%		
Total Marks	**25**	**-**	**5**	**10**	**10**	**-**	**-**
			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 AssessmentTable for Laboratory (Practical): (Not Applicable)

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: (Not Applicable)

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	The Constitution of India	P.M.Bakshi	Universal Law Publishing, New Delhi 15th edition, 2018, ISBN: 9386515105
2.	Introduction to Indian Constitution	D.D.Basu	Lexis Nexis Publisher, New Delhi, 2015, ISBN:935143446X
3.	Introduction to Constitution of India	B. K. Sharma	PHI, New Delhi, 6thedition, 2011, ISBN:8120344197
4.	The Constitution of India	B.L. Fadia	Sahitya Bhawan,Agra, 2017, ISBN:8193413768
5.	The Constitutional Law of India	Durga Das Basu	LexisNexis Butterworths Wadhwa, Nagpur 978-81-8038-426-4

(b) Online Educational Resources:

1. https://www.coursera.org/learn/principles-of-management
2. http://www.legislative.gov.in/constitution-of-india
3. https://en.wikipedia.org/wiki/Constitution_of_India
4. https://www.india.gov.in/my-government/constitution-india
5. https://eci.gov.in/about/about-eci/the-setup-r1/
6. https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/
7. https://main.sci.gov.in/constitution
8. https://nios.ac.in/media/documents/srsec317newE/317EL8.pdf
9. https://legalaffairs.gov.in/sites/default/files/chapter%203.pdf
10. https://www.concourt.am/armenian/legal_resources/world_constitutions/constit/india/india-e.htm
11. https://constitutionnet.org/vl/item/basic-structure-indian-constitution

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

(c) Others:

A) Course Code : 2400408(T2400408)

B) Course Title : Employability Skills Development (Common for all Programmes)

C) Pre- requisite Course(s) :

D) Rationale :

Education may only be enough to qualify for a job, but employability skills are the major criteria to be considered for a job role. Employability skills are building blocks of any career and they equip one to carry out roles in the company to the best of their ability. Employers usually check these employability skills before hiring. These sets of job-readiness skills are behaviors that are necessary for every job and are essential attitudes that enable students to grow in their careers. Employers value employability skills because they regard these as indications of how their employees will get along with other team members and customers, and how efficiently they will be able to handle the job performance and career success. Employers like to hire a technical expert who also displays well-rounded employability skills.

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 Build resume and showcase portfolio for placement activity.

CO-2 Face interviews and participate effectively in Group Discussions.

CO-3 Apply engineering tools in work situations and societal processes.

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/ Developmentof 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		
CO-2	3	-	-	-	2	2	3		
CO-3	3	-	-	3	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	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				
	2400408	Employability Skills Development	01	-	-	-	01	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)	
	2400408	Employability Skills Development	25	--	-	--	--	--	25

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:

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: T2400408

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Perform SWOT analysis and reflect. *TSO 1b.* Develop skills in carrier planning & goal setting *TSO 1c.* Build a Resume using Internet formats. *TSO 1d.* Develop and Design portfolios. *TSO 1e.* Maintain good grooming attire. *TSO 1f.* Introduce oneself to others. *TSO 1g.* Develop a personal website.	**Unit-1. Goal Setting** 1.1 Career planning, SWOT 1.2 Resume using Internet formats. 1.3 Showcase portfolios. 1.4 Personal grooming. 1.5 Self-Introduction. 1.6 Website Development.	**CO1**
TSO 2a. Face interviews and E- Interviews confidently *TSO 2b.* Participate in group discussions. *TSO 2c.* Use Social media for personal enrichment &Netiquette *TSO 2d.* Manage self for higher growth. *TSO 2e.* Use body language for effective communication *TSO 2f.* Manage Emotions for personal growth	**Unit-2. Capacity Development** 2.1 Interview Skills 2.2 Group Discussion – Do's & don'ts, leadership, Teamwork, how to interrupt, synthesis, and analysis of topics. 2.3 Social Media for Personal Enrichment 2.4 Body language 2.5 Self-Management. 2.6 Emotional Intelligence	**CO2**
TSO 3a Develop & Maintain Social Contacts. TSO 3b Engage in Social Service projects. TSO-3c Collaborate for mutual advantage. TSO 3d Apply QC-Tools in work situations. *TSO 2g.* TSO 3e Practice Lean Manufacturing Techniques for Production and Operations	**Unit-3. Utilizing Potential** 3.1 Social Networking 3.2 Social Engagements, Volunteering 3.3 Collaboration& Team-work. 3.4 QC-Tools – Check sheets, Fishbone Diagram, Histogram, Pareto chart, Control-chart, Scatter Diagram, Stratification, 3.5 Lean Manufacturing, Kanban, Kaizen, Five S, Poka-yoke, Quality Circle	**CO3**

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: - (Not Applicable)

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

a. Assignments:

1 Build a resume for Placement Activity.

2 Prepare letters for job applications.

b. Micro Projects:

1. Prepare collage for personal grooming.
2. Develop a showcase portfolio.
3. Prepare a collage of different gestures and postures of Body Language.
4. Apply Five-S in a work situation.
5. Arrange Mock Interviews, appear, and video record. Reflect on your performance.
6. Organize Group discussions on current topics and video record. Reflect on your performance

c. Other Activities:

1. Seminar Topics:
   - Emotional Intelligence.
   - 21st Century Skills.
   - Multitasking

2. Visits: Visit nearby Job Fairs, Career Guidance Fairs, etc.

3. Self-learning topics:

   - Use of social media.
   - Self-introduction.
   - Self-grooming.
   - QC Tools.
   - Lean Manufacturing,
   - Emotional Intelligence.

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	30%	-	50%	-	-	-	-
CO-2	40%	-	25%	50%	-	-	-
CO-3	30%	-	25%	50%	100%	-	-
Total Marks	**25**	**-**	**10**	**10**	**5**	**-**	**-**
			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): (Not Applicable)

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
1.	Group Discussion Tables and chairs	Round Table with seating arrangement for 15 person
2..	Mock Interviews infrastructure	2 parallel mock interview set up with recording facility.
3.	Ear phones	Compatible with mobile phones
4	Headphones	Compatible with laptop/desk top
5	Blue tooth	Compatible with mobile phones.
7.	CC TV Camera	Compatible to record presentations and addresses.
8.	Podium	For presentations on stage.
9.	Public address system	For public meetings.
10.	Full Glass Mirrors	For monitoring Body Language

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Employability Skills Skills for Employability	Dr. M. Sen Gupta	Innovation Publication Pvt Ltd, 2020 ISBN: 978-81-933819-1-5
2.	Employability Skills	Dr. Nishith Rajaram Dubey, Anupam Singh	Indra Publishing House, 2023 ISBN - 978-93-93577-68-9
3.	Organizational Behavior	A. K. Chitale, Rajendra Prasad Mohanty and Dr Nishith Dubey	PHI Learning Pvt Ltd ISBN 978-81-203-4696-3
4.	Managerial Skills	Dr Nishith Dubey & Prof Gitanjali Shrivastava	Shiva Prakashan, Indore, India,2010, ISBN 81-7677-100-7,
5.	Body Language	Allan Pease	Pease International PTY. Ltd Australia
6.	Production and Operations Management Goods & Services approach	Dr S.V Deshmukh, Dr A. K. Chitale and Dr Nishith Dubey	Archers & Elevators publishing house, Bangalore, ISBN 9789386501197
7.	Emotional Intelligence	Daniel Goleman	Word Press.Com, 9789382563792
8.	How to win friends and influence people	Dale Carnegie	Srishti Publishers & Distributors, Delhi, India

(b) Online Educational Resources:

1. 4-Year Plan For Career Success: https://eng.umd.edu/sites/clark.umd.edu/files/4%20Year%20Plan%20For%20Career%20Success_Categorized_1.pdf

2. CAREER DEVELOPMENT GUIDE https://www.engineersaustralia.org.au/sites/default/files/content-files/2016-12/career_development_guide_may_2014.pdf

3. Tips for successful career planning tips://www.aryacollege.in/tips-for-successful-career-planning-in-2021/

4. Career Planning – Complete Guidehttps://www.mygreatlearning.com/blog/what-is-career-planning/

5. Build Resume: https://www.themuse.com/advice/how-to-make-a-resume-examples

6. Build Resume https://resumegenius.com/blog/resume-help/how-to-write-a-resume

7. Body Language: https://ubiquity.acm.org/article.cfm?id=3447263

8.Group Discussions: https://brightspeaking.com/en/how-to-effectively-participate-in-a-group-discussion/

9.Carrier planning & goal setting: https://www.hays.com.au/career-advice/career-development/setting-career-goals

10. Carrier planning & goal setting: https://www.thebalancemoney.com/step-by-step-guide-to-setting-career-goals-2059883

11. Collaboration & teamwork: https://www.indeed.com/career-advice/career-development/teamwork-and-collaboration

12. Interview skills: https://www.youtube.com/watch?v=lKCTS9dY4h4

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

(c) Others:

******

A) Course Code : **2400107(T2400107)**

B) Course Title : Professional Ethics (Non-Exam Course)
(CE, CSE, ELX, ELX (R), FTS, ME, ME (Auto), AIML, MIE, CHE, CRE, FPP, GT)

C) Pre- requisite Course(s) : General awareness about moral values and different workplaces

D) Rationale :

One of the programme outcomes of the diploma course incorporates ethical practices in application of appropriate technology in context of society, sustainability, environment. It is of great importance to distinguish between the terms values and ethics. Ethics are norms of behaviour that are set by authorities at workplace. The persons belonging to that workplace are expected to follow the norms. Ethical behaviour at workplace affects the person's relation to people, creates a positive impact on business processes and environment. It is very important that a person has not only understanding of ethical behavior but also the responsibility to set ethical practices in own area of work.

While values are personal preferences or choices, they may sometimes contradict with ethics at his workplace. The values of a person affect behavior and his decision making.

This course is meant to sensitize the student to ethics in profession and motivate them to demonstrate ethical behavior in day to day activities and be aware of ethics in profession.

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 Demonstrate good values and ethics in the day to day activities and at workplace.

CO-2 Identify a set of values and ethics related to fair professional practice.

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/ Developmentof 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	3	3	3	3	3		
CO-2	3	3	3	3	3	3	3		
CO-3	3	3	3	3	3	3	3		

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:

Course Title	Scheme of Study (Hours/Week)				
	Classroom Instruction (CI)		Notional Hours (TW/ Activities+ SL)	Total Hours (CI+TW/ Activities)	Total Credits (C)
	L	T			
Professional Ethics	01	-	-	01	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) 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.

I) Theory Session Outcomes (TSOs) and Units: T2400107

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Define concepts-values and ethics and attitude, development of attitudes *TSO 1b.* Identify situations depicting values such as humanity, honesty, punctuality, respect, peace, empathy *TSO 1c.* Identify situations depicting ethics, healthy competition, integrity, truthfulness,	**Unit-1.0 Values and Ethics in Day to Day Life** 1.1. Values- Definition and examples, Ethics- definition and examples, Concept of attitude and development of attitude 1.2. Importance of values and ethics in day to day activities and at workplace- Ethical ways of communication, environmental considerations in engineering processes, Basic concept of Carbon footprint, ethics at workplace 1.3. Examples of situations depicting values- based decisions and ethical behavior in day to Day life	**CO1**
TSO 2a. Identify the relevance of profession to society and environment *TSO 2b.* Identify the need of values and ethics in profession related activities *TSO 2c.* Identify Ethical conflicts	**Unit-2.0 Values and Ethics in Profession** 2.1 Relevance of profession to society 2.2 ethical principles such as respecting others and ourselves, respecting the rights of others, keeping promises, avoiding unnecessary problems to others, avoiding cheating and dishonesty, showing gratitude towards others and encouraging them to work	**CO1, CO2**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	2.3 Identification of activities and related ethical and unethical behavior for professional activities in their area of work 2.4 Examples of situations depicting values- based decisions and ethical behavior	

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

J) Suggested Activities and Self-Learning: Reading books related to values and ethics/Epics/ Daily news and discussions in group

a. Assignments: Preparation for group discussion, panel discussion, role play, case study, seminar, skits

b. **Micro Projects:** Skits development and performance, poster making,

c. **Activities: Role Play, Case studies, Debates, Group Discussion,**

d. Suggested Seminar/ Debates on Topics such as:

i. charters of professions
ii. Importance of Values and ethics in identified profession
iii. Issues of ethical conflicts- Professional rivalry,
iv. Identified issues from Chanakya Neeti
v. Ethics in scriptures such as Kabir ke Dohe etc.
vi. Lessons on ethics from religious scriptures
vii. Issued based on Happenings reported in Daily news

K) 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, Case Method, Group Discussion, seminar, Role Play, Live Demonstrations in Classrooms, Lab, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

L) List of Major Laboratory Equipment, Tools and Software: (Not Applicable)

M) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Professional Ethics and Human Values	D. R. Kiran	McGraw-Hill Education Pvt. Ltd. 2007 ISBN: 9780070633872
2.	A Textbook On Professional Ethics And Human Values	Dr. R S Naagarazan	New Age International (P) Ltd., Publishers, 2017 ISBN: 9789386173768
3.	Ethics, Integrity and Aptitude – **Hindi** (Paperback) (एथिक्स, सत्यनिष्ठा एवं अभिवृत्ति)	P.D Sharma	Rawat Publications, 2019 ISBN: 978-8131609941
4	Chanakya - Niti (Sutra Sahit) (Hindi)	Chanakya	Maple Press. 2014 ISBN 978-9350335529

(b) Online Educational Resources:

1. Free Ethics & Compliance Toolkit - Ethics and Compliance Initiative (https://www.ethics.org/resources/free-toolkit
2. Free & open source tools for ethics practitioners (https://www.cityethics.org/harvard-lab)
3. Microsoft Word - KPTI XII - Indian Ethics 03-05-13 (https://cbseacademic.nic.in/web_material/doc/ktpi/30_KPTI%20XII%20-%20Indian%20Ethics_old.pdfcbseacademic.nic.in)
4. Knowledge Traditions & Practices of India (cbseacademic.nic.in) (ps://cbseacademic.nic.in/web_material/Circulars/2012/68_KTPI/Module_5.pdf)

(c) Others:

******

A) Course Code : **2400009(T2400009)**

B) Course Title : Open Educational Resources (OER) (Non-Exam Course)
(FTS, CHE, CSE, EE, ME, ME (Auto), MIE, ELX, AIML, CRE, CACDDM, FPP, GT)

C) Pre- requisite Course(s) :

D) Rationale :

Open educational resources (OER) are openly-licensed, freely available educational materials that can be modified and redistributed by users. Learning about Open Educational Resources (OER), copyright, and Creative Commons licenses is a valuable endeavor for content creators, users, and anyone interested in sharing knowledge and creative works. Creative Commons licenses, offer a standardized way to grant permissions for the use and sharing of creative works. Learning about OER, copyright, and Creative Commons licenses is an ongoing process. As these fields evolve, it's important to stay informed and continue exploring new resources and practices.

After going through this course, students will at first place have reasonable idea to explore and use various OERs useful for their course of study and secondly, be motivated for fair use of resources available to them on various platform by understanding the restrictions and legal issues related to copyright and other licensing policies.

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 Open Educational Resources (OER) after their evaluation
CO-2 Use copyright material appropriately.
CO-3 Implement suitable Creative Common License.

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/ Developmentof 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	-	2	-	-	3	-	3		
CO-2	-	2	-	-	3	-	3		
CO-3	-	3	-	-	3	-	3		

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:

Course Title	Scheme of Study (Hours/Week)				
	Classroom Instruction (CI)		Notional Hours (TW/ Activities+ SL)	Total Hours (CI+TW/ Activities)	Total Credits (C)
	L	T			
Open Educational Resources	01	-	-	01	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) 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.

I) Theory Session Outcomes (TSOs) and Units: T2400009

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Explain the difference between OER and other free educational materials. *TSO 1b.* Describe the challenges and benefits of using OER in a class. *TSO 1c.* Apply various aspects of evaluating OER before use *TSO 1d.* Explain necessity to assess an OER's adaptability. *TSO 1e.* Use preliminary search for open educational resource. *TSO 1f.* Find OER using various resources.	**Unit-1.0 Open Educational Resources** 1.1 OER - definition 1.2 What is NOT OER. 1.3 Benefits of using OER – Benefits to Students - Access to Quality Education 1.4 OER - Benefits to Faculty - Use, Improve and Share, Network and collaborate with peers, Lower Cost, Improve access to information 1.5 Challenges of Using OER – Subject Availability, Format and Material type availability, Time and Support availability 1.6 Evaluating OER – a) Clarity, Comprehensibility, and Readability, b) Content and Technical Accuracy, c) Adaptability and Modularity, d) Appropriateness and Fit, e) Accessibility 1.7 Finding Open Content - OER Search Scenario Filter by Usage Rights in Google, Repositories and Search Tools, Subject-specific Repositories	**CO1**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 2a. Explain benefits of copyright protection for creator *TSO 2b.* Explain exceptions and limitations to copyright law *TSO 2c.* List rights granted to copyright holders. *TSO 2d.* Explain Exceptions and limitations to copyright law *TSO 2e.* Explain Fair use/fair dealing apply to copyright *TSO 2f.* Elaborate Public domain and how does it relate to copyright *TSO 2g.* Elaborate penalties for copyright infringement. *TSO 2h.* Explain copyright for digital content and the internet. *TSO 2i.* Explain use of copyrighted works in education *TSO 2j.* Explain the use of free licenses	**Unit-2.0 Copyright and Open Licensing** 2.1 Copyright and what it does protect, benefits of copyright protection for creators, duration of copyright protection last, rights granted to copyright holders. 2.2 Exceptions and limitations to copyright law, fair use/fair dealing apply to copyright 2.3 Public domain and its relation to copyright. 2.4 Penalties for copyright infringement 2.5 Apply copyright to digital content and the internet 2.6 Use of copyrighted works in education. 2.7 Open Licenses – GNU – Free Documentation license, Free Art License 2.8 Why Free Licenses – Retain, Reuse, Revise, Remix, Redistribute	**CO2**
TSO 3a. Describe the four different Creative Commons License components. *TSO 3b.* Explain the reason some CC-licensed content might not be considered OER. *TSO 3c.* Explain the Strength and weakness of four Open CC Licenses *TSO 3d.* Choose the right Creative Commons license for work. *TSO 3e.* Apply a Creative Commons license to existing work. *TSO 3f.* Use of Creative Commons licenses for commercial purposes. *TSO 3g.* Modify a work licensed under Creative Commons. *TSO 3h.* Revoke a Creative Commons license, combine works with different Creative Commons licenses *TSO 3i.* Differentiate between Attribution and Citation	**Unit-3.0 Creative Common Licenses** 3.1 Alternatives to copyright as Creative Commons licenses. 3.2 Four components of creative common Licenses – Attribution, Share- Alike, Non – commercial, No Derivatives 3.3 Choosing a Creative common licenses – Wiley's 5 Rs and Creative Common Licenses 3.4 Four Open CC Licenses and Their Strengths and Weaknesses – (a) CC BY (b) CC BY SA (c) CC BY NC (d) CC BY NC SA 3.5 Attribution Vs Citation - Creative Commons licensed work without giving attribution 3.6 Apply a CC License - choose the right Creative Commons license for work, apply a Creative Commons license to existing work, Creative Commons licenses be used for commercial purposes, modify a work licensed under Creative Commons, revoke a Creative Commons license, combine works with different Creative Commons licenses	**CO3**

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

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

a. Assignments:

Related to Open Educational Resources – CO1

i. OER help to reduce the cost of education for students. Justify?
ii. Explain why it is necessary to assess an OER's adaptability?
iii. Identify four search tools for finding open educational resources?
iv. Identify at least two search tools for finding openly licensed media?

Related to Copyright – CO2

i. Explain copyright and what does it protect
ii. Explain the rights granted to copyright holders
iii. Describe the exceptions and limitations to copyright law
iv. Elaborate the way fair use/fair dealing apply to copyright?
v. Describe the public domain and its relationship with copyright
vi. Elaborate the penalties for copyright infringement?
vii. Explain copyright apply to digital content and the internet
viii. Explain the way copyright law address the use of copyrighted works in education

Related to Creative Common Licenses – CO3

i. Explain various Creative Commons licenses
ii. Describe, how can you apply a Creative Commons license to your existing work?
iii. Explain the benefits of using Creative Commons licenses?
iv. Elaborate, how you can modify a work licensed under Creative Commons?
v. Are Creative Commons licenses valid worldwide?
vi. Elaborate how Creative Commons license can be revoked, once it has been applied to your work?
vii. Explain, how anyone use a Creative Commons licensed work without giving attribution?
viii. Explain the limitations/restrictions while using works with Creative Commons licenses?

b. Micro Projects:

1. Collect information on the impact of OER on cost savings and student engagement.
2. Search at least four OER related to topic of your Engineering Discipline over Internet. Evaluate the material based on the relevance, accuracy and usability.
3. Explore the different types of resources under creative Commons licenses (e.g., CC BY, CC BY-SA, CC BY-NC, etc.) and their specific permissions and restrictions.
4. Create a comparative analysis chart or infographic that visually represents the key characteristics of each license.
5. Select minimum 5 real-world examples from different domains (such as music, art, literature, or education) where creators have used Creative Commons licenses.

c. Other Activities:

1. Seminar Topics:
   - OER Quality Assurance
   - OER Repositories and Platforms
   - Creative Commons and Digital Media
   - Creative Commons in the Visual Arts
   - Examine the legal implications of using Creative Commons licenses, including the obligations and responsibilities of both creators and users and present it.

2. Self-learning topics:
   - Open Licensing and Copyright: Understanding the Legal Framework for OER
   - Creative Commons and the future of Copyright
   - Copyright and Open Access Publishing
   - Copyright and Software

K) 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, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, 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.

L) List of Major Laboratory Equipment, Tools and Software: (If Any)

S. No.	Name of Equipment, Tools and Software	Broad Specifications
1.	Computers	Desktop computer with word processing and presentation facility
2.	Internet	Internet Connectivity

M) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	The OER Starter Kit.	Abbey Elder - 2019	IA: Iowa State University Digital Press, available under a Creative Commons Attribution 4.0 International License. Retrieved from iastate.pressbooks.pub/oerstarterkit
2.	A Brief History of Open Educational Resources	Bliss, T J and Smith, M. - 2017	In: Jhangiani, R S and Biswas-Diener, R. (Eds.) Open: The Philosophy and Practices that are Revolutionizing Education and Science (pp. 9–27). London: Ubiquity Press. DOI: https://doi.org/10.5334/bbc.b.

Note: Above listed books are available in soft form and can be downloaded as given respective link

(b) Online Educational Resources:

1. OER for Empowering Teachers Instructional Material by P. Malliga is licensed under a Creative Commons Attribution 4.0 International License.
2. William & Flore Hewlett Foundation. (n.d.). OER defined. Retrieved from https://hewlett.org/strategy/open-educational-resources/
3. Free Software Foundation. (2008). GNU Free Documentation License. Retrieved from https://www.gnu.org/licenses/fdl.html
4. Copyleft Attitude. (2007). Free Art License 1.3. Retrieved from http://artlibre.org/licence/lal/en/
5. Free Software Foundation. (n.d.). What is copyleft? Retrieved from https://www.gnu.org/copyleft/copyleft.html

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

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