

Curriculum of Diploma Programme in Garment Technology



**Department of Science, Technology and Technical
Education (DSTTE), Govt. of Bihar**

**State Board of Technical Education
(SBTE), Bihar**

Semester – II

Teaching & Learning Scheme

Course Codes	Category of course	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				
2452201	BEC	Fundamentals of Electrical, Electronics & Mechanical Engg. (FCT, GT)	03	-	04	02	09	06
2400102C	ASC	Applied Physics -C (FPP, GT, CACDDM, TE)	03	-	04	02	09	06
2452203	PCC	Pattern Making	03	-	04	02	09	06
2400104	HSC	Communication Skills (English) (Common for all Programmes)	03	-	04	02	09	06
2452206	PCC	Sewing Workshop	-	-	04	02	06	03
2418107	BCC	ICT Tools (CE, ME, ME (Auto), FTS, CSE, AIML, MIE, CRE, CHE, FPP, TE, CACDDM, GT)	-	-	04	02	06	03
Total			12	-	24	12	48	30

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

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 - II Assessment Scheme

Course Codes	Category of course	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)	
2452201	BEC	Fundamental of Electrical, Electronic & Mechanical Engg. (FCT, GT)	30	70	20	30	20	30	200
2400102C	ASC	Applied Physics -C (FPP, GT, CACDDM, TE)	30	70	20	30	20	30	200
2452203	PCC	Pattern Making	30	70	20	30	20	30	200
2400104	HSC	Communication Skills (English) (Common for all Programmes)	30	70	20	30	20	30	200
2452206	PCC	Sewing Workshop	-	-	20	30	20	30	100
2418107	BCC	ICT Tools (CE, ME, ME (Auto), FTS, CSE, AIML, MIE, CRE, CHE, FPP, TE, CACDDM, GT)	-	-	20	30	20	30	100
Total			120	280	120	180	120	180	1000

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

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** : 2452201 (T2452201/P2452201/S2452201)
- B) **Course Title** : Fundamentals of Electrical, Electronics & Mechanical Engineering (FCT, GT)
- C) **Pre- requisite Course(s)** : Engineering Physics, Basic mathematics
- D) **Rationale** :

In the present scenario, the costume design industry is moving towards automation and electrically operated machines are used for the same. Therefore, it is very essential to know about the basic concepts, components and parameters of electricity, power and heat transmission and maintenance practices. This course is a fundamental course designed mainly to introduce the diploma students of Fashion design and Costume Design and Dress Making, the basic concepts & laws of electricity, basic electrical and electronic components, electromagnetic induction and electrical machines. Basics of power transmission, types of drives, law of gearing and maintenance practices applicable for textile industries are also essential for diploma engineers, so that students will be able to apply the same for solving the problems in their own discipline.

- 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.** Identify various basic electric components of a given electrical system in FCT Industry.
- CO-2.** Apply the fundamental laws of DC, AC and magnetic circuits to a interpret working of given electrical system.
- CO-3.** Apply the principles of electromagnetic induction and electrostatics to interpret the working a given equipment.
- CO-4.** Use relevant power transmission systems and steam properties in a given situation.
- CO-5.** Use suitable maintenance practices in various divisions of Fashion and Clothing industries.

F) Suggested Course Articulation Matrix (CAM):

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

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

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

G) Teaching & Learning Scheme:

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				
2452201	Fundamental of Electrical, Electronics and Mechanical Engineering	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:

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)	
2452201	Fundamental of Electrical, Electronics and Mechanical Engineering	30	70	20	30	20	30	200

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.

- 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 (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP2020 related reforms like Green skills, Sustainability, Society connect, Multi disciplinary aspects, Indian Knowledge System (IKS) and others need to be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2452201**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO.1a Apply Ohm's law and Kirchhoff's to determine current and voltage, power in a given circuit. TSO.1b Calculate the equivalent resistance in a given series and parallel electric circuit. TSO.1c Calculate the equivalent Capacitance/ inductance in a given series and parallel electric circuit. TSO.1d Calculate impedance in simple AC circuit with R, L and C components TSO.1e Identify different components used in industry such as resistors, inductors, capacitors, switches. measuring devices for current and voltage, TSO.1f Describe the applications of such as switches and transducers	Unit-1.0 Electrical & Electronic Components and Basic Circuits 1.1 Electric charge, flow of charges, Electric Current, Potential /Voltage difference, Concept of ideal and practical current sources Ohm's law, Kirchhoff's laws, Current, Voltage and Power in DC circuits 1.2 Resistor -Properties, Effect of temperature on resistance, types of resistors and their applications, Importance of heat sinks 1.3 Capacitors and inductors – Properties, Expression for capacitance, Capacitive reactance, Energy stored in capacitor, Types of capacitors and their applications, Properties of Inductors, Self and mutual inductance, Induced emf/voltage, inductive reactance, Energy stored in inductor, types of Inductors and their application 1.4 Concept of AC circuit, Concept of impedance, Frequency, Time-period, Amplitude, Calculation of impedance 1.5 Identification of different components used in industry such as resistors, inductors, capacitors, switches. measuring devices for current and voltage, Concept of ratings of components and ranges of measuring instruments, importance of calibration, Introduction to transducers	CO-1
TSO.2a Explain various terms related to magnetic circuits Calculate work, power, and energy for given series circuits and parallel circuit, TSO.2b Calculate current voltage and power in given ac circuit – resistive and RLC circuit TSO.2c Identify various devices used in specified fashion industry that consist of AC and DC circuit based electromagnetic components TSO.2d Describe the construction and working of PN junction Diode.	Unit-2.0 Fundamentals of D.C, A.C. and Magnetic Circuits 2.1. Magnetic circuits-Magnetic flux, Magnetomotive force, Magnetic field strength, Permeability, Reluctance. 2.2. AC circuits- Angular Velocity, RMS Value, Average Value, Form factor, Peak factor, Current, Voltage, Power, energy and Phase difference in AC circuits, power factor and its importance, use of Ohm's law, Kirchhoff's laws, series and parallel circuits, single phase and three phase supply	CO-2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO.2e Describe the applications of semiconductor devices and circuits such as diodes, LEDS, rectifiers, regulators, PNP and NPN transistors and ICs, displays in Fashion and Clothing Industry	2.3. Devices used in specified fashion industry that consist of electromagnetic complements 2.4. PN Junction Diode- construction and working, Purpose and working of Uncontrolled rectifiers- half wave and full wave, power-supplies, regulators, timers, ICs and displays, Construction and use of Transistors- PNP and NPN	
TSO.3a Explain the phenomenon of induced e.m.f and current for given electromagnetic circuit, TSO.3b Explain Faraday's laws of electromagnetic induction in given electromagnetic circuit TSO.3c Describe the construction and working of the given electrical machines and switching devices used in garment manufacturing. TSO.3d Identify domestic and industrial electric supply network and components	Unit-3.0 Electromagnetic Induction and Electrical Machines 3.1 Concept of Electromagnetic induction 3.2 Induced e.m.f- Statically (self and mutual) and dynamically induced emf, Faraday's Laws of electromagnetic Induction, Fleming's R.H. rule; direction of induced E.M.F, Fleming's L.H. rule 3.3 Transformer (single phase), voltage ratio and current ratio of transformer, DC Motor, Servo motor, Universal motor: Construction, working and applications, relays, Electric Press 3.4 Introduction to Different components and layout of domestic and industrial electric supply network and components	CO-3
TSO4a. Compare different types of mechanical drives TSO4b. Calculate the length of belt, velocity ratio for the given situation TSO4c. Select appropriate type of gears and gear trains depending on the given applications/situation TSO4d. Explain method of lubrication and law of gearing. TSO4e. Explain steam and their phases along with field applications. TSO4f. Calculate dryness fraction and degree of superheat TSO4g. Describe the criteria for selection of steam properties for the given situation.	Unit-4.0 Power Transmission & Steam Properties: 4.1 Concept of Power transmission, Types of Drives – Belt, Rope, Gear drives & their comparison; Belt Drives - flat belt, V- belt & its applications; Angle of lap, Belt length. Slip and Creep; Determination of Velocity Ratio; Conditions for maximum power transmission in textile industries. 4.2 Gear Drives – Spur gear terminology; Types of gears and gear trains, their selection for different applications related to textile industries; Train value & Velocity ratio for compound, reverted and suitable gear trains used in textiles and CDDM; Law of gearing; Methods of lubrication. 4.3 Formation of steam, various phases like wet steam, dry saturated Steam, superheated steam; Types of steam, Enthalpy, Specific volume, Internal energy and dryness fraction of steam, steam calorimeters. 4.4 Dryness fraction, degree of superheat, sensible heat, Latent heat, calculation of enthalpy of wet, dry saturated & superheated steam using steam table. 4.5 Selection of applicable steam properties used in various processes / operations related to textile & garment manufacturing.	CO-4
TSO.5a Explain the importance of maintenance in FCT industries.	Unit-5.0 Maintenance Practices 5.1 Concept of maintenance and its importance in FCT industries.	CO-5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO.5b Develop preventive maintenance plan for machineries/ equipment used in FCT industries.	5.2 Systems of maintenance; Types of maintenance- Preventive, break down, Planned, Corrective and Predictive maintenance.	
TSO.5c Explain the maintenance practices being used in garment manufacturing units.	5.3 Maintenance schedule –machine wise, preventive maintenance program/plan for different divisions of FCT industries.	
TSO.5d Enlist the common faults that may occur in modern / Hi-tech machines used in textile industries and also the remedies.	5.4 Maintenance Practices, maintenance tools, meters and gauges; Lubrications, properties and their applications, Common electrical faults and maintenance of electrical systems	
TSO.5e Enumerate the safety measures while carrying out maintenance of automated textile systems / sub systems.	5.5 Maintenance of modern / Hi-tech machines used in textile industries – Auto levelers, Feed systems, Protector motion, Sewing and Weaving machine etc.	
	5.6 Overview of maintenance of Automated manufacturing and processing systems	

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452201

Practical/ Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 1.1 Segregate different basic electrical and electronics components according to their types	1.	Segregation of different electrical and electronics components and their applications in FCT industry	CO-1
LSO 2.1 Segregate Given different electrical devices as per their industrial applications (Timers, displays, transducers etc)	2.	Segregation of (Timers , displays , transducers etc) based on their applications in FCT industry	CO-1
LSO 3.1 Determine the value of parameters of given electronic components	3.	Determination of Value of color-coded resistor, capacitors, inductors and diodes, variable resistors (Minimum three of each type)	CO-1
LSO 4.1 Test the functionality of a given semiconductor diode	4.	Test different types of semiconductor diode	CO-1, CO-3
LSO 5.1 Determine voltage across each element to test given rectifier circuit using relevant instruments	5.	Measurement of voltage across each element in a given low voltage rectifier circuit	CO-1, CO-2 CO-3
LSO 6.1 Verify Kirchoff's Laws in given DC circuit using relevant instruments	6.	Verification of Kirchoff's Laws in given circuit	CO-1, CO-2
LSO 7.1 Measure voltage, current and power in a given series circuit and parallel circuit	7.	Measurement of voltage, current and power in a given series circuit and a parallel circuit	CO-2
LSO 8.1 Determine voltages in the given electric circuit in a laboratory installation	8.	Measurement of voltage at different places in a given laboratory installation using relevant meters (Note- This experiment should be conducted under MANDATORY supervision of Faculty/ lab assistant)	CO-2, CO-3
LSO 9.1 Demonstrate statically and dynamically induced emf using relevant instruments in given setting.	9.	Demonstration of statically and dynamically induced emf.	CO-3

Practical/ Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 10.1</i> Demonstrate self and mutual inductance using relevant instrument in given setting.	10.	Demonstration of self and mutual inductance in a given set up.	CO-3
<i>LSO 11.1</i> Demonstrate Faraday's laws of electromagnetism using relevant instrument in given setting.	11.	Demonstration of Faraday's laws of electromagnetism	CO-3
<i>LSO 12.1</i> Demonstrate Flemings right hand and left hand rules using relevant instrument in given setting.	12.	Demonstration of Flemings right hand and left hand rules	CO-3
<i>LSO 13.1</i> Measure Voltage ratio and current ratio of a given single phase transformer	13.	Voltage ratio and current ratio of single-phase transformer	CO-3
<i>LSO 14.1</i> Dismantle the given DC machine <i>LSO 14.2</i> Identify the different parts of the dismantled DC machine <i>LSO 14.3</i> Demonstrate the working of the DC machine using Virtual Lab/Simulator	14.	Demonstration of parts and working of a DC Motor	CO-3
<i>LSO 15.1</i> Dismantle the given Servomotor <i>LSO 15.2</i> Identify the different parts of the dismantled Servomotor <i>LSO 15.3</i> Demonstrate the working of the Servomotor using Virtual Lab/Simulator	15.	Demonstration of parts and working of a Servomotor.	CO-3
<i>LSO 16.1</i> Dismantle the given Universal motor <i>LSO 16.2</i> Identify the different parts of the dismantled Universal motor <i>LSO 16.3</i> Demonstrate the working of the Universal motor using Virtual Lab/Simulator	16.	Demonstration of parts and working of a Universal motor.	CO-3
<i>LSO 17.1</i> Demonstrate the parts and working of a given relay	17.	Demonstration of parts and working of a given relay	CO3
<i>LSO 18.1</i> Identify different types of belts <i>LSO 18.2</i> Calculate the length of belt for different situation	18.	Calculation of belt length of open and cross belt drives.	CO-4
<i>LSO 19.1</i> Prepare gear train using suitable type of gear for a given situation <i>LSO 19.2</i> Modify roller speed of a given machine by changing gear ratio	19.	Various types of gears and gear trains.	CO-4
<i>LSO 20.1</i> Determine dryness fraction of steam by separating and throttling calorimeter.	20.	Use of calorimeter	CO-4
<i>LSO 21.1</i> Segregate given attachments of sewing machine based on their application	21.	Segregation of different types of sewing machine attachments as per use.	CO-5
<i>LSO 22.1</i> Trouble shoot given sewing machine.	22.	Identification of the faults and repair of sewing machine	CO-5
<i>LSO 23.1</i> Identify the faults of sewing machine and repair the same.	23.	Identification of the faults of sewing machine and repair the same.	CO-5
<i>LSO 24.1</i> Clean and lubricate the given machine by oiling it at various oiling points.	24.	Cleaning and lubricating the given garment manufacturing machine by oiling it at appropriate oiling points/places.	CO-5
<i>LSO 25.1</i> Development of maintenance plan of different section of FCT Industry	25.	Preparation of a maintenance plan of given Fashion clothing industry.	CO 3, CO-5

L) Suggested Term Work and Self-Learning: S2452201

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.
- Prepare a report on any controller used in the machines in an/ FCT industry.
 - Draw a layout of supply of power from 11KV/ 132 KV transformer installed for your institute campus.
 - Prepare a chart of different types of switches and relays used in your laboratory/ workshop.
 - Collect samples from local market and internet. Prepare charts of features of timers, displays, transducers, relays used in FCT Industry
 - Draw a well labeled layout diagram of electrical power supply installation of your laboratory From metering to point of use.
 - Collect the specifications of different moving components of sewing machines.
 - Prepare a maintenance chart for the clothing production machines used in your institute
 - Draw a well labeled diagram of sewing machine showing its cleaning and oiling points
 - Prepare sketch of a gearing system used in any yarn spinning machine.

b. Micro Projects:

- Demonstrate the working of resistor, Inductor and Capacitor through role play or using animation
- Prepare a chart for commonly used capacitors used in different domestic appliances (name of appliances with type and ratings)
- Make a collection of five to six animations demonstrating aspects of
 - Faraday's laws of electromagnetic induction
 - Lenz's law
 - operation of relays

and develop a Power Point presentation on role of electromagnetic devices in machines of FCT

- Collect literature and samples of timers displays, transducers used in FCT Industry. Prepare a Power Point presentation based on your information.
- Prepare a report on the comparison of technical parameters of NPN and PNP transistor.
- Build and test the transistor switch circuit.
- Opening a FCT machine and take pictures of its different sections. Develop a PPT on working of the machine.
- Prepare a report on the use of Tailoring Tools & Time Saving Devices.
- Identify the faults of given weaving machine and carry out relevant remedial procedure
- Prepare a report on the comparison of various heating system used in textile industry.

c. Other Activities:**1. Seminar Topics:**

- New/Advanced Tailoring Tools and Time Saving Devices
- Sensors used in FCT industry.
- Electronic controllers in Fashion and clothing
- Application of sensors and transducers I FCT industry

2. Surveys:

- Carry out a market survey for availability of different types of electronic components used for building speed and time control.
- Carry out a survey a market for availability of different types of transducers

- Carry out a market survey for availability of different types of sewing machines available in the market

3. Visits:

- Visit a nearby garment factory and prepare a report on the sewing machines, controllers, switching devices and other equipment used to prepare the garments.
- Visit a nearby yarn/fabric manufacturing facility and prepare a report on maintenance schedule of various equipment

d. Self-Learning Topics:

- Industrial/commercial applications of AC and DC supply
- Differentiate between AC and DC in terms of generation, waveforms, and power
- Applications of statically and dynamically induced emf
- Motors used in electrical sewing machine
- Different types of sewing machines and their components available in the market
- Maintenance plan of Textile machinery

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

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

Legend:

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

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentages 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 Electrical & Electronic Components and Basic Circuits	8	CO-1	12	4	4	4
Unit-.2.0 Fundamentals of DC, AC and Magnetic Circuits	10	CO-2	14	4	6	4
Unit-.3.0 Electromagnetic Induction and Electrical Machines	10	CO-3	12	4	4	4
Unit-.4.0 Power Transmission & Steam Properties	10	CO-4	16	4	6	6
Unit-.5.0 Maintenance Practices	14	CO-5	16	4	6	6
Total Marks	48		70	20	26	24

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

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Segregation of different electrical and electronics components and their applications in FCT industry	CO-1	50	40	10
2.	Segregation of (Timers, displays, transducers etc.) based on their applications in FCT industry	CO-1	50	40	10
3.	Determination of Value of color-coded resistor, capacitors, inductors and diodes, variable resistors (Minimum three of each type)	CO-1	50	40	10
4.	Test different types of semiconductor diode	CO-1, CO-2	50	40	10
5.	Measurement of voltage across each element in a given low voltage rectifier circuit	CO-1, CO-2	50	40	10
6.	Verification of Kirchoff's Laws in given circuit	CO-1, CO-2	50	40	10
7.	Measurement of voltage, current and power in a given series circuit and a parallel circuit	CO-1, CO-2	50	40	10
8.	Measurement of voltage at different places in a given laboratory installation using relevant meters (Note- This experiment should be conducted under MANDATORY supervision of Faculty/ lab assistant)	CO-3	50	40	10
9.	Demonstration of statically and dynamically induced emf.	CO-3	50	40	10
10.	Demonstration of self and mutual inductance in a given set up.	CO-3	50	40	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
11.	Demonstration of Faraday's laws of electromagnetism	CO-3	50	40	10
12.	Demonstration of Flemings right hand and left hand rules	CO-3	50	40	10
13.	Voltage ratio and current ratio of single-phase transformer	CO-1	50	40	10
14.	Demonstration of parts and working of a DC Motor	CO-1	50	40	10
15.	Demonstration of parts and working of a Servomotor.	CO-1	50	40	10
16.	Demonstration of parts and working of a Universal motor.	CO-1, CO-3	50	40	10
17.	Demonstration of parts and working of a given relay	CO-1, CO-2 CO-3	50	40	10
18.	Calculation of belt length of open and cross belt drives.	CO-1, CO-2	50	40	10
19.	Various types of gears and gear trains.	CO-2	50	40	10
20.	Use of calorimeter	CO-2, CO-3	50	40	10
21.	Segregation of different types of sewing machine attachments as per use.	CO-3	50	40	10
22.	Identification of the faults and repair of sewing machine	CO-3	50	40	10
23.	Identification of the faults of sewing machine and repair the same.	CO-3	50	40	10
24.	Cleaning and lubricating the given garment manufacturing machine by oiling it at appropriate oiling points/places.	CO-3	50	40	10
25.	Preparation of a maintenance plan of given Fashion clothing industry.	CO-3	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.	Resistors, Capacitors, and Inductors	Different types and ratings	1,3
2.	Electronic components Connecting probes	PN Junction diode -NPN and PNP, BJT Connecting probes	1
3.	DC Source (Variable)	0-40/50 Volts	2
4.	AC Source (Variable)	0-40/50 Volts	2
5.	Load bank	Load bank in steps of 20 Watt	2
6.	Voltmeter	0-300 V, 0-75 V (MI & MC)	2,5,7
7.	Ammeter	0-5/10/40 A (MI), 0-4 A (MC)	2,4,6
8.	Multimeter	Digital Multimeter: 3 1/4 digit display, 9999 counts digital multimeter measures: V_{ac} , V_{dc} (1000V max), A_{dc} , A_{ac} (10 amp max), Resistance (0 - 100 M Ω), Capacitance and Temperature measurement	2,3,4, 5,7
9.	Demonstration kit for demonstrating statically and dynamically induced emf	Demonstration kit for demonstrating statically and dynamically induced emf for demonstration purpose	8
10.	Demonstration kit to demonstrate self and mutual inductance.	Demonstration kit to demonstrate self and mutual inductance.	9
11.	Demonstration kit for Faraday's laws of electromagnetic induction	Demonstration kit for Faraday's laws of electromagnetic induction for demonstration purpose	10
12.	Demonstration kit for Flemings right hand and left hand rules	Demonstration kit for Flemings right hand and left hand rules for demonstration purpose	11
13.	Rheostats	0-50 Ohms, 5 Amp; 0-300 Ohms, 4 amp	2
14.	Single phase transformer	Single phase transformer of low power rating for laboratory purpose	12
15.	DC Motor	DC Motor of small rating for laboratory experimentation purpose	13
16.	Servomotor	Servomotor of small rating for laboratory experimentation purpose	14
17.	Universal motor	Universal motor of small rating for laboratory experimentation purpose	15
18.	Belt Drive Apparatus with different belt arrangement / working model	Belt drive Apparatus with Standard specification or Working model of different belt arrangement	16
19.	Gear Train Apparatus/ working model	Gear Train Apparatus with different gears (spur, helical, bevel etc.) and gear train (simple, compound, reverted and epicyclic gear train) with Standard specification or Working model of different gears (spur, helical,	17

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
		bevel etc.) and gear train (simple, compound, reverted and epicyclic gear train)	
20.	Separating and throttling calorimeter	Standard specification	18
21.	Sewing Machine	Sewing Machine foot drive with cover	19,20,21
22.	Carding / speed frame / ring frame / loom	Available in the polytechnic of standard specifications	22,23
23.	Garment manufacturing machine	Available in the polytechnic of standard specifications	22,23
24.	Samples of Transducers, timers , displays, relays etc used in FCT Industry	Available in Laboratories of concerned sections, collected from actual industries,	1,2

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Basic Electrical Engineering	Mittle and Mittal	McGraw Education, New Delhi, 4015, ISBN: 978-0-07-0088574-5
2.	Fundamentals of Electrical Engineering	Saxena, S. B. Lai	Cambridge University Press, ISBN : 9781107464353
3.	Electrical Technology Vol- I	Theraja, B. L.	S. Chand Publications, New Delhi. 4015, ISBN: 9788141944405
4.	Basic Electrical and Electronics Engineering	Jegathesan, V.	Wiley India, New Delhi, 4015, ISBN : 97881436549513
5.	Basic Electronic Engineering	BaruV.;KaduskarR.;Gaikwad S.T.	Dream tech Press, New Delhi, 4015, ISBN: 9789350040146
6.	Cutting & Tailoring Course	Gayatri Verma	Asian Publishers Latest
7.	The Art of Sewing	Anna Jacob Thomas	USB Publishers & Distributors. 1993
8.	Theory of Machines	R. S. KHURMI J. K. GUPTA	S. CHAND; 14th edition,2020 ISBN-978-8121925242
9.	Dynamics of Machines	J. B. K. Das	Sapna Book House, 2008 ISBN-978-8128009112
10.	Thermodynamics an engineering approach	Yunus A. Cengel Michael A. Boles Mehmet Kanoglu	McGraw Hill Education india, 2019 ISBN: 9789353165741, 9353165741
11.	Basic and applied thermodynamics	P.K. Nag	McGraw Hill Education india, second edition; ISBN: 9780070151314, 9780070151314
12.	A text book of Thermal Engineering	R.S. Khurmi J.K. Gupta	S. Chand, ISBN: 9788121925730,9788121925730

(b) Online Educational Resources:

1. <https://nptel.ac.in/courses/108104139>
2. <https://archive.nptel.ac.in/courses/108/104/108104139/>
3. <https://archive.nptel.ac.in/courses/117/106/117106108/>
4. <https://alison.com/course/advanced-diploma-in-basic-electrical-circuits>
5. <https://archive.nptel.ac.in/courses/108/105/108105159/>
6. <https://www.youtube.com/watch?v=-BN1kQqHmyI>
7. <https://www.youtube.com/watch?v=c6IDFVZ9M8k>
8. Study on the Basics of Maintenance of Textile Machinery - Textile Learner

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

(c) Others:

1. Electrical and Electronics Engineering Handbook
2. Users' Guide
3. Manufacturers' Manual
4. Lab Manuals

- A) **Course Code** : 2400102C (T2400102C/P2400102C/S2400102C)
- B) **Course Title** : Applied Physics – C (FPP, GT, CACDDM, TE)
- C) **Pre- requisite Course(s)** :
- D) **Rationale** :

As a subject Physics includes large numbers of diverse topics, related to materials, energy and their interactions that exists in the world around us. It empowers us to explain the different physical phenomena by observation and prediction. Engineering Diploma graduates are required to use of principles of physics in various fields of engineering and technology are given prominence in the course content. This course will help the diploma engineers to apply the basic concepts and principles of physics for solving various broad-based engineering problems and comprehend different state of art technology-based applications.

- 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** Estimate the errors in measurements of physical quantity with precision.
- CO-2** Apply the concept of force, work and energy in different engineering situations
- CO-3** Apply the concepts and principles of rotational and wave motion in various textile and allied engineering problems.
- CO-4** Select relevant materials for industrial applications based on its physical properties.
- CO-5** Apply the basic concepts of modern physics for solving engineering problems.

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

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

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

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

G) Teaching & Learning Scheme:

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				
2400102C	Applied Physics - C	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:

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)	
2400102C	Applied Physics - C	30	70	20	30	20	30	200

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.

- 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: T2400102C**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Distinguish between fundamental and derived physical quantity. <i>TSO 1b.</i> Estimate the errors in the measurement of given physical quantity. <i>TSO 1c.</i> Derive dimensional formula of a given physical quantity. <i>TSO 1d.</i> Apply dimensional analysis for inter conversion of units.	Unit-1.0 Unit and Measurements 1.1 Physical quantities, fundamentals and derived units and system of units 1.2 Accuracy, precision and errors (systematic and random) in measurements, Method of estimation of errors (absolute and relative) in measurement, propagation of errors, significant figures 1.3 Dimensions and dimensional formulae of physical quantities, Principle of homogeneity of dimension in an equation 1.4 Applications of dimensions: conversion from one system of units to other, corrections of equations and derivation of simple equations. 1.5 Ancient astronomical instruments: Chakra, Dhanuryatra, Yasti and Phalaka yantra . (IKS)	CO1
<i>TSO 2a.</i> Explain the terms force, impulse and momentum. <i>TSO 2b.</i> Apply the concept of conservation of linear momentum in various situations. <i>TSO 2c.</i> Apply the concept of friction in various engineering situations. <i>TSO 2d.</i> Calculate the net work done conservative and non-conservatives forces <i>TSO 2e.</i> Apply the concept of <u>conservation of energy</u> in various situations. <i>TSO 2f.</i> Derive the expression for power in terms of force and velocity.	Unit-2.0 Force, Work, Power & Energy 2.1 Force, momentum, impulse, conservation of linear momentum, recoil of gun & rocket propulsion 2.2 Friction: coefficient of friction, static, kinetic and limiting friction, law of friction, Advantages and limitations due to friction. methods to remove friction 2.3 Work: Types (zero work, positive & negative work), work done by conservative and non-conservatives force 2.4 Energy: Kinetic energy, work energy theorem, potential energy, <u>conservation of energy</u> and its applications.	CO2
<i>TSO 3a.</i> Explain circular motion and various terms related to circular motion. <i>TSO 3b.</i> Distinguish between translational and rotational motion. <i>TSO 3c.</i> Explain the terms torque and angular momentum. <i>TSO 3d.</i> Apply the principle of conservation of angular momentum in given situation.	Unit-3.0 Circular, Rotational and SHM 3.1 Circular motion, angular displacement, angular velocity, frequency, time period, angular acceleration, relation between angular & linear velocity and linear acceleration & angular acceleration	CO3

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 3e.</i> Differentiate between periodic motion and oscillatory motion. <i>TSO 3f.</i> Explain the various terms related to SHM. <i>TSO 3g.</i> Derive an expression for total energy of particle executing SHM.	3.2 Translational and rotational motion, torque and angular momentum, conservation of angular momentum 3.3 Periodic and Oscillatory Motion 3.4 Simple Harmonic Motion (SHM): Displacement, velocity, acceleration, time period, frequency and their interrelation, Kinetic and potential energy of particle executing SHM	
<i>TSO 4a.</i> Explain the stress-strain curve of a given elastic or plastic body. <i>TSO 4b.</i> Apply the concepts of surface tension and viscosity to solve a given engineering problems. <i>TSO 4c.</i> Explain the behavior of given fluids on the basis of their viscosity. <i>TSO 4d.</i> Determine the various modes heat transfer in a given engineering problem. <i>TSO 4e.</i> Apply the principle of calorimetry in various engineering situations.	Unit-4.0 Physical Properties of Matter and Calorimetry 4.1 Elasticity: Hooke's law, Coefficient of elasticity, Young's modulus, Bulk Modulus and modulus of rigidity, stress-strain curve, 4.2 Surface tension: cohesive and adhesive forces, Surface Tension, angle of contact, applications of surface tension, capillary action, effect of temperature and impurity on surface tension 4.3 Viscosity: Viscosity and coefficient of viscosity, Critical Velocity, Reynold's number, streamline and turbulent flow, Terminal velocity, Stokes law and effect of temperature on viscosity. 4.4 Calorimetry: concept of heat and its unit, principal of calorimetry, specific heat capacity, latent heat (fusion and vaporization), mechanical equivalence of heat.	CO4
<i>TSO 5a.</i> Apply the concept of photoelectric effect to explain the of photonic devices. <i>TSO 5b.</i> Explain Laser, components of laser and its various engineering applications. <i>TSO 5c.</i> Explain propagation of light in optical fiber and applications of optical fiber. <i>TSO 5d.</i> Describe the properties of nanomaterials and its various applications related to textile industries.	Unit-5.0 Modern Physics 5.1 Photoelectric effect; threshold frequency, work function, Stopping Potential, Einstein's photoelectric equation. 5.2 Lasers: Properties of Laser, Energy levels, ionization and excitation potentials; spontaneous and stimulated emission; population inversion, pumping methods, types of lasers: Ruby laser, engineering and medical applications of lasers. 5.3 Optical fibers: Total internal reflection, acceptance angle and numerical aperture, Optical fiber types, applications in telecommunication, medical field and sensors. 5.4 Nanotechnology: Properties (optical, magnetic and dielectric properties) of Nanomaterials and its application, Bhasma (Ancient Ayurveda, IKS)	CO5

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2400102C

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Use Vernier caliper to measure the known and unknown dimensions of a given small object. <i>LSO 1.2.</i> Estimate the mean absolute error up to two significant figures.	1.	Vernier caliper	CO1
<i>LSO 2.1.</i> Use screw gauge to measure the diameter/ thickness of a given object. <i>LSO 2.2.</i> Estimate the mean absolute, relative and percentage errors up to three significant figures.	2.	Screw gauge	CO1
<i>LSO 3.1.</i> Use Spherometer to measure radius of curvature of given convex and concave mirror/surface. <i>LSO 3.2.</i> Estimate errors in the measurement.	3.	Spherometer	CO1
<i>LSO 4.1.</i> Determine the spring constant of a given spring.	4.	Spring Oscillator	CO2
<i>LSO 5.1.</i> Use mixture method to determine the specific heat capacity of given solid	5.	Specific heat of Solid	CO2
<i>LSO 6.1.</i> Use Searle's apparatus to determine the Young's modulus of a given wire	6.	Searle's apparatus	CO4
<i>LSO 7.1.</i> Apply Stokes law to determine the coefficient of viscosity of a given viscous liquid.	7.	Stokes law	CO3
<i>LSO 8.1.</i> Determine the inverse square law relation between the distance of photocell and light source v/s intensity of light source.	8.	Photo-electric cell experiment	CO3
<i>LSO 9.1.</i> Determine the Numerical Aperture (NA) of a given step index optical fiber	9.	Numerical Aperture of an optical fiber	CO5
<i>LSO 10.1.</i> Measure wavelength of a He-Ne/diode laser by using a plane diffraction grating.	10.	He-Ne/diode laser	CO5
<i>LSO 11.1.</i> Plot the graph between KE of Photo electron v/s frequency of incident light <i>LSO 11.2.</i> Determine the value of Plank's Constant (h) from the Graph between KE v/s frequency of incident light. <i>LSO 11.3.</i> Determine the variation of stopping potential w.r.t frequency of incident photon	11	Photo electric effect (virtual lab experiment)	CO5
<i>LSO 12.1.</i> Determine the wave length of different spectral lines of Hydrogen spectra	12	Emission Spectra of Hydrogen (virtual lab experiment)	CO5

K) Suggested Term Work and Self Learning: S2400102C

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 such as:
1. Use dimensional analysis to check the validity of equations or derive relationships between physical quantities.
 2. Explain the importance of using consistent units in calculations and the consequences of unit errors.
 3. Find the value of heat produced in a body due to loss of mechanical energy in different situation.
 4. Explain the **conservation of PE to KE** and vice versa in a given physical situation.

5. Find the temperature of the mixture of two different liquids in thermal equilibrium for a given conditions.
6. Prepare a chart on lasers mentioning different characteristics along with applications(online)

b. Micro Projects:

1. Make prototype Vernier calipers and screw gauge of desired LC.
2. Collect wires/ fibers different materials and find the fracture point for required applications
3. Fiber optics: Demonstrate the phenomenon of total internal reflection.
4. LASER: Prepare model to demonstrate the properties and applications of LASER.
5. Viscosity: Collect 3 to 5 liquids and prepare a working model to differentiate liquids based on viscosity and demonstrate their applications.
6. Motion: Prepare model of ball rolling down on inclined plane to demonstrate the conservation of energy and motion of an object in inclined plane.
7. Prepare prototype Atwood machine
8. Use smartphone to measure the different physical quantity with the sensor applications.
9. Prepare list of photonic materials used for engineering applications.

c. Other Activities:

1. Seminar Topics:
 - Needs of measurements in engineering and science.
 - Applications of circular motions in daily life and engineering.
 - LASER: Production & applications in science, industry, medical and defense, holography.
 - Optical fibers: Construction and application in communication systems.
 - Synthesis and applications of nanomaterials in textile industry.
 - Applications of lasers in textile
2. Visits:
 - Visit nearby industry with Instrumentation, production and Laser/optical fibers facilities. Prepare report of visit with special comments Instrumentation technique and material used.
 - Visit planetarium, Science city and research institutions for exploring the experimental and research facilities available.
3. Self-Learning Topics:
 - Vectors and its properties with applications.
 - types of fundamental units, system of units
 - Newton's Laws of motion, momentum, inertia, impulse.
 - derivation of formula for moment of inertia
 - Force, work, energy, power, work-energy theorem, law of conservation of energy
 - Frictions and its types
 - Electromagnetic waves
 - Pressure, density, Pascal's law, atmospheric and gauge pressure
 - Work done in various Processes, Adiabatic constant ($C_p/C_v = \gamma$), Mayer's formula ($C_p - C_v = R$)
 - CO₂ Laser, Semiconductor LASER, He Ne laser.
 - CNT, Graphene, C₆₀

- 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	12%	12%	20%	20%	10%	30%	20%
CO-2	22%	22%	20%	20%	10%	15%	20%
CO-3	24%	24%	30%	20%	30%	25%	20%
CO-4	22%	22%	15%	20%	20%	10%	20%
CO-5	20%	20%	15%	20%	30%	20%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

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

**.: Mentioned under point- (N)

#.: Mentioned under point-(O)

Note:

- The percentages 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 Unit and Measurements	8	CO1	10	4	4	2
Unit-2.0 Force, Work, Power & Energy	10	CO2	14	4	4	6
Unit-3.0 Circular, Rotational and SHM	8	CO3	16	4	6	6
Unit-4.0 Physical Properties of Matter and calorimetry	12	CO4	16	4	6	6
Unit-5.0 Modern Physics	10	CO5	14	4	4	6
Total	48	-	70	20	24	26

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.	Vernier caliper	CO1	60	30	10
2.	Screw gauge:	CO1	60	30	10
3.	Spherometer.	CO1	60	30	10
4.	Spring Oscillator	CO3	50	40	10
5.	Specific heat of Solid	CO2	50	40	10
6.	Searle's apparatus	CO3	60	30	10
7.	Stokes law	CO3	50	40	10
8.	Photo-electric cell experiment	CO3	60	30	10
9.	Numerical Aperture of an optical fiber	CO5	40	50	10
10.	He-Ne/diode laser	CO5	50	40	10
11.	Photo electric effect (virtual lab experiment)	CO5	70	20	10
12.	Emission Spectra of Hydrogen (virtual lab experiment)	CO4	70	20	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.	Vernier-Caliper	Range: 0-15 cm, Resolution 0.01 cm.	1,8
2.	Micrometer screw gauge	Range 0-25 mm, Resolution 0.01 mm	2,7,8

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
3.	Spherometer	Vertical scale range -10mm to 10 mm, Graduation resolution 0.01 mm	3
4.	Spring oscillator	A spring, a measuring ruler, mass hanger and variable masses (50 gram, 100 gram) .	4
5.	Specific heat of solid	Calorimeter with stirrer, balance, thermometer and mass box	5
6.	Searle's apparatus	Two long steel wires of the same length and diameter, Brass rods, stopwatch, meter scale, 0.5 kg slotted masses, hanger	6
7.	Stokes law	A long cylindrical glass jar, Transparent viscous fluid, stop watch, bob, glycerin, tube clamp stand, Meter scale, Spherical ball, Thread	7
8.	Photo-electric cell experiment	Photo cell mounted in the metal box, Lamp holder with 60W bulb, analog meters (500 μ A & 1000mV), wooden bench fitted with scale and connecting wires	8
9.	Numerical Aperture of an optical fiber	Laser Diode (2- 3 mW, 632nm) Objective(10X), Optical fiber (1-meter-long), detector with BNC connector Auto arranging Multimeter, Screen with circular graduations, one circular base with linear and circular motion and optical bench	9
10.	He-Ne/diode laser	He-Ne Laser (output 0.5 –5.0mW, wavelength 632.8 nm power supply 240V, 50Hz) Or diode laser (2- 3 mW, 632nm), Transmission grating 15000 lines/inch, photo detector with BNC connector and holder, screen with clamp type holder, knife edge with micrometer movement, digital multimeter, scale with mount	10
11.	Photo electric effect (virtual lab experiment)	https://vlab.amrita.edu/?sub=1&brch=195&sim=840&cnt=1	11
12.	Emission Spectra of Hydrogen (virtual lab experiment)	https://vlab.amrita.edu/?sub=1&brch=195&sim=359&cnt=1	12

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Concept of physics-1	H.C. Verma	Bharti Bhawan Publications, 2021 ISBN: 8177091875, 978-8177091878
2.	Concept of physics-2	H.C. Verma	Bharti Bhawan Publications, 2021 ISBN: 8177092324, 978-8177092325
3.	Text Book of Physics for Class XI (Part-I, Part-II)	N.C.E.R.T., Delhi	N.C.E.R.T., Delhi, 2019 ISBN: 81-7450-508-3(Part-I) & ISBN: 81-7450-566-0 (Part-II)
4.	Text Book of Physics for Class XII (Part-I, Part-II)	N.C.E.R.T., Delhi	N.C.E.R.T., Delhi, 2019 ISBN: 81-7450-631-4 (Part-I) & ISBN: 81-7450-671-3 (Part II)
5.	Engineering Physics	P. V. Naik	Pearson Education Ltd., 1993 ISBN: 817758362X, 978-8177583625
6.	Applied Physics-I	Dr. Mina Talati & Vinod Kumar Yadav	Khanna Book Publishing (2021) ISBN : 978-93-91505-43-1
7.	Applied Physics-II	Dr. Hussain Jeevakhan	Khanna Book Publishing (2021) ISBN: 978-93-91505-57-8
8.	Engineering Physics	D. K. Bhattacharya & Poonam Tandon	Oxford University Press, ISBN: 0199452814, 978-0199452811

(b) Online Educational Resources:

1. <https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype>
2. www.nanowerk.com
3. <https://www.open2study.com/courses/basic-physics-150315/>
4. <https://nptel.ac.in/courses/122107035>
5. <https://nptel.ac.in/courses/122104016>
6. <http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>
7. <https://www.physicsclassroom.com/>
8. <https://phys.org/>
9. <https://vlab.amrita.edu/?sub=1>
10. <https://www.olabs.edu.in/?pg=topMenu&id=40>
11. <https://www.khanacademy.org/science/physics>

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

(c) Others:

1. Fundamentals of Physics, David Halliday, Robert Resnick and Jearl Walker
2. Engineering Physics, R.K. Gaur and S. L. Gupta
3. University Physics with Modern Physics, Sears and Zemansky
4. Physics for Scientists and Engineers with Modern Physics by Raymond A. Serway and John W. Jewett
5. Physics Laboratory Manual, David H Loyd

- A) **Course Code** : 2452203 (T2452203/P2452203/S2452203)
- B) **Course Title** : Pattern Making
- C) **Pre- requisite Course(s)** :
- D) **Rationale** :

Pattern making is the bridge function between design and production because a sketch can only be turned into a garment via a pattern which interprets the design in the form of the garments components. The construction and development of garment patterns combines three major elements: interpretation, technique and drafting skills. In this course of Pattern Making the students will learn to interpret designs and learn to create the patterns for those designs.

- 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 the various tools in pattern making.
- CO-2** Measure and record body measurements accurately to obtain fit and create stylized designs.
- CO-3** Demonstrate basic pattern making skills to make basic blocks for Children, Male and Female garments as per size charts.
- CO-4** Develop design variations in Children's patterns
- CO-5** Incorporate basic pattern making principles in draft manipulation and contouring.

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

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

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				
2452203	Pattern Making	03	-	04	02	09	06

Legend:

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

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

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

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

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

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

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

H) Assessment Scheme:

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)	
2452203	Pattern Making	30	70	20	30	20	30	200

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.

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

J) **Theory Session Outcomes (TSOs) and Units: T2452203**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Explain the need and scope of pattern making. TSO 1b. List the tools necessary for measuring, drafting, tracing, marking and cutting. TSO 1c. Explain terminologies used in pattern making. TSO 1d. Draw and Label patterns with appropriate symbols/markings. TSO 1e. Describe the steps in preparing fabric for cutting TSO 1f. Explain the things to consider when laying out fabric for cutting TSO 1g. Describe the various types of folds used for cutting fabric for bespoke garments based on widths of fabrics and ensuring the correct grain lines.	Unit-1.0 Basics of Pattern Making 1.1 Definition and scope of Pattern Making 1.2 Tools needed for Pattern Making, Measuring Tools: Flexi tape, Measuring tape, ruler, L-scale, I/4th scale. Drafting & Tracing Tools: Brown paper with grain line, Marking pens & pencils, Tacking pins, Tracing Wheel, French curve, Tailors Chalk, Dress maker's carbon Paper, Tracing Paper. Cutting Tools Scissors, Pinking shear, pattern notcher & Punches. A4 size double sided, self healing, cutting mat with grid. 1.3 Basic Terminologies: Grain line, Selvage, fabric widths, right & wrong side of fabrics, on-grain, off-grain, true bias, bust point, dart, construction lines, cutting lines, ease, side seam, seam allowances, shoulder lines, neck lines, armhole scye, chest, waist & hip line, hem line, Centre front and Centre back line. 1.4 Symbols & Commercial Pattern Markings: Grain line, sewing lines, seam allowance, plackets/ openings, notches or balance marks, darts, centre or fold line, pleats, tucks, gathers, buttons and buttonhole positions. 1.5 Preparation of Fabrics for cutting: Pre shrinking, straightening of fabric grain, print directions. 1.6 Laying out the fabric, things to consider e.g. print, nap, width of fabric. 1.7 Types of Folds- Standard lengthwise folds, Partial fold, crosswise fold, double fold, Bias fold.	CO1
TSO 2a. Explain the terminologies used in female and male measurements. TSO 2b. List the points to be kept in mind when taking measurements. TSO 2c. Describe the method of taking vertical, horizontal and girth measurements. TSO 2d. Design personal measurement charts for Men, Women and Children. TSO 2e. Explain the different measurement methods. TSO 2f. Use Standard Measurement charts. TSO 2g. Use Metric sizing charts.	Unit- 2.0 Measurements 2.1 Terminologies of different measurements (Female and Male). 2.1.1 Female: Length of gown, shoulder width, Round chest, Round waist, Hip girth/ Round hip, Neck circumference/ Neck round, Front waist length, Back waist length, Front width, Back width, Bust height, Hip height, Armhole girth/ Arm scye, Arm circumference, Sleeve lengths, wrist circumference. 2.1.2 Male: Neck, full chest, full shoulder,	CO2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 2h. Differentiate between US, European, and Asian sizes in patterns TSO 2i. Define the need and scope of pattern grading.	sleeve, bicep, wrist, waist/ stomach, hips/seat measurements. Front jacket length, trouser length, trouser out seam, trouser inseam measurements. Crotch measurement, Thigh, Knee and Ankle round measurements. 2.2 Measuring Tips, basic Vertical, Horizontal & girth measurements. 2.3 Personal measurement chart for women, men and children for bespoke garments 2.4 Measurement Methods: Direct, Height, Girth measurement method 2.5 Standard Measurement Charts 2.6 Metric Sizing and Size charts used in USA, Europe and Asia 2.7 Grading of Patterns: Purpose and scope	
TSO 3a. Explain the importance of blocks in the garment industry TSO 3b. Differentiate between flat pattern making and draping principles of making blocks. TSO 3c. List out advantages and disadvantages of flat pattern making and draping methods of drafting. TSO 3d. Analyze the different types of blocks used in the industry. TSO 3e. Construct Basic block for Children, women and Men. TSO 3f. Construct Basic block for ladies skirt TSO 3g. Construct blocks using 1/4 th scales	Unit– 3.0 Basic Bodice Blocks 3.1 Importance, Principles of flat pattern method, its advantages and disadvantages. 3.2 Principles of draping, its advantages and disadvantages. 3.3 Types of Blocks: Basic blocks for bespoke garments based on sizes, standard block, simplified block, tailoring block, trade block, primary block, Secondary block. 3.4 Construction of Basic bodice blocks for Children, Women and Men. 3.5 Construction of Basic block for Skirts 3.6 Working with 1/4 th scales on blocks	CO3
TSO 4a. Describe the application of gathers as a means to introduce fullness in garments. TSO 4b. Describe the application of pleats as a means to introduce fullness in garments as well as design in a structured manner. TSO 4c. Differentiate between the different types of pleats used in garments. TSO 4d. Describe the application of tucks as a means to introduce design and shape in garments. TSO 4e. Differentiate between the different types of tucks used in garments. TSO 4f. Describe the application of yokes as a means to introduce pattern details in garment making for functional and decorative purposes. TSO 4g. Identify the need of openings and plackets in garments TSO 4h. Select the most appropriate type of placket to be used for comfortable ease of wearing and taking off the different garments.	Unit– 4.0 Pattern Details 4.1 Gathers: Shape, fullness through gathers and various Positions; Gathers in upper and lower garments, Methods of introducing gathers in the different pattern parts. 4.2 Pleats: Fullness through pleats, Types of Pleats - Knife, box, inverted, accordion, radial/fan pleats; Methods of adding pleats in patterns. 4.3 Tucks: Shaping through tucks, Types of Tucks – Pin tucks, Cross tucks, Blind tucks, spaced tucks, shell tucks, corded tucks, and released tucks; Method of making tucks. 4.4 Yokes: Yokes in upper bodices and their shapes, Yokes in lower bodices and their shapes, method of constructing yokes 4.5 Plackets & Openings: Need for plackets & openings, Upper placket & under placket, Types of plackets – fully open front placket, wrapped placket, faced & bound placket, shirt placket, double shirt placket,	CO4

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 4i. Describe the application and construction of facings used at various places in the garment for finishing the raw edges of the garment. TSO 4j. Differentiate between shaped and bias facings	4.6 krta placket & zipper openings. Facings: construction of shaped facings, bias facings, neckline & hemline facings.	
TSO 5a List out various types of infants Clothes. TSO 5b Construct various types of Zabra's Or baby dresses for infants. TSO 5c Construct Basic Bodice blocks for Toddlers (Boys & Girls). TSO 5d Demonstrate drafting of A-line dress for 3 years old girl. TSO 5e Construct set in sleeves such as puff sleeve, leg o mutton and bell sleeves by adaptation of plain sleeves. TSO 5f Construct flat collars such as peter-pan, bertha and sailor collar. TSO 5g Demonstrate drafting of boys shirt with collar TSO 5h Demonstrate drafting of boys Shorts with front hip pockets and back elasticized waistband. TSO 5i Construct Bodice block and skirt for pre-teens and adapt the skirt into gathered/circular /tiered skirt as well as draft petal/circular sleeves.	Unit-5.0 Children's Garments 5.1 Types of Zabras's/ baby dresses, Rompers, Jumpsuits and onesies. 5.2 Toddler clothes and Styles for boys and Girls 5.3 Drafting and Layout of A-Line dress for 3 years old girl with yoke, pleats/gathers back placket, puff/ leg o mutton/ bell sleeve & peter-pan/bertha/sailor collar 5.4 Drafting and Layout of boys shirt and Shorts for 3 years old. 5.5 Clothes for Pre-teens: Drafting and Layout of a party dress with petal/circular sleeves and Circular/tiered/gathered Skirt.	CO5

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2452203

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 1.1 Identify the different Vertical, Horizontal and Girth measurements on a Male & Female human figure. LSO 1.2 Prepare Personal Measurement Charts for Women, Men and Children for application to different blocks.	1.	Vertical, Horizontal and Girth measurements on a human figure.	CO1, CO2
LSO 2.1 Identify the different measurements required for Zabra's/ baby dresses. LSO 2.2 Use Instructions and diagram to construct two types of Zabra's/ baby dresses using Standard measurements.	2.	Zabra's/ baby dresses for infants using standard measurements.	CO3, CO4
LSO 3.1 Identify the different measurements required to draft a bloomer for infants. LSO 3.2 Use Instructions and diagram to construct bloomer for infants with elasticised waist and leg round using Standard measurements	3.	Bloomer for infants using standard measurements.	CO3, CO4

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO 4.1 Identify the different measurements required to draft a Romper/ Jumper for toddlers. LSO 4.2 Use Instructions and diagram to draft a Romper/jumper using Standard Measurements of a toddler.	4.	Sleeveless Romper/Jumper for a toddler.	CO2, CO3, CO4
LSO 5.1 Identify the different measurements required to draft a basic A line Bodice and Sleeve block for a 3 years old girl using standard measurements. LSO 5.2 Use Instructions and diagram to draft a basic A line Bodice and Sleeve block for a 3 years old girl using standard measurements.	5.	Full size Basic A line Bodice and Sleeve Block	CO2, CO3, CO4
LSO 6.1 Demonstrate the introduction of round and straight yoke in the bodice block. LSO 6.2 Calculate and extend the lower bodice draft suitably to introduce pleats and gathers.	6.	Adapt the A line bodice block of 3 years old to introduce round yoke in the front with pleats and straight yoke at the back with gathers and placket	CO3, CO4, CO5
LSO 7.1 Demonstrate variations in set in sleeves LSO 7.2 Use instructions to adapt the basic plain sleeve into a puff sleeve, leg o mutton sleeve & bell sleeve.	7.	Adapt the basic Sleeve block of 3 years old into puff sleeves, leg o mutton sleeves & bell sleeves	CO3, CO4, CO5
LSO 8.1 Identify the measurements necessary to construct flat collars. LSO 8.2 Use Instructions and diagram to draft Peter- pan, Bertha, Sailor, Roll and Chinese collars. LSO 8.3 Construct Peter-pan , Bertha, Sailor, Roll and Chinese Collars using draft for 3 year old	8.	Peter-pan, Bertha, Sailor, Roll and Chinese Collars using draft for 3 year old	CO4, CO5
LSO 9.1 Identify the measurements necessary to construct boy's shirt with collar. LSO 9.2 Use Instructions and diagram to draft a boy's shirt with collar.	9.	Full size Boys shirt with patch pocket, collar & Plain Sleeve Block of Standard measurements. (3 years old boy)	CO2, CO3, CO4
LSO 10.1 Identify the measurements necessary to construct boy's shorts. LSO 10.2 Use Instructions and diagram to draft a boy's shirt with front hip pockets and elasticised waistband behind.	10.	Full size Boys Shorts with front hip pockets and elasticized waistband behind.	CO2, CO3, CO4
LSO 11.1 Identify the different measurements required to draft a basic Bodice and Sleeve block for pre- teen girl using standard measurements. LSO 11.2 Use Instructions and diagram to draft a basic bodice and sleeve block for pre- teen girl using standard measurements.	11.	Full size Basic Bodice, Sleeve and Skirt block for pre-teens, using standard measurements.	CO2, CO3, CO4
LSO 12.1 Demonstrate variations in set in sleeves for pre-teens. LSO 12.2 Use instructions to adapt the basic plain sleeve into petal sleeves & circular flounce sleeve.	12.	Plain sleeve for pre-teens into petal & circular flounce sleeve	CO4, CO5
LSO 13.1 Identify the different Measurements necessary to adapt the basic skirt into A-	13.	Basic skirt block for pre-teens into A- line, flared, gathered, tiered & circular skirts.	CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
line, flared, gathered, tiered & circular skirts for pre-teens LSO 13.2 Use Instructions to adapt the basic skirt into A-line, Flared, gathered, tiered & circular skirts for pre-teens.			
LSO 14.1 Identify the different Measurements necessary to construct a full size basic bodice, Skirt & sleeve blocks for Women. LSO 14.2 Use Instructions and diagram to construct Basic bodice block (one dart) Sleeves and Basic Skirt (with darts) blocks for Women's Garments using standard measurements.	14.	Full size Basic Bodice (one dart), Sleeve and Skirt block with darts for women, using Standard measurements	CO2, CO3
LSO 15.1 Identify the different Measurements necessary to construct a full size basic bodice & sleeve block for Men. LSO 15.2 Use Instructions and diagram to construct Basic bodice block & Sleeve blocks for Gents Garments using standard measurements.	15.	Full size Basic Bodice & Sleeve Block of Standard measurements for Gents.	CO2, CO3
LSO 16.1 Using a 1/4th Scale construct a Basic Bodice, Skirt and Sleeve block using standard measurements. (for women)	16.	1/4 th Scale size Basic Bodice (one dart), Sleeve and Skirt block with darts for women, using standard measurements.	CO2, CO3

L) Suggested Term Work and Self Learning: S2452203

Some sample suggested assignments, micro project and other activities are mentioned here for reference.

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

1. Prepare a list of tools manufacturers and supplier's for pattern making using Internet resources.
2. Prepare a collage for accurate measurements.
3. In teams prepare basic blocks for Children, Male and female and prepare a report.
4. Collect the anthropometric data for kids in eastern state from library/internet and prepare a pattern for T-shirt.
5. Explore the scanner-based measurement tool for pattern making and prepare a report.

b. Micro Projects: A suggestive list of micro-projects is given here. Similar micro-projects that match the COs could be added by the concerned course teacher.

1. Design and draft a baby dress for new born.
2. Design and draft a garment for a toddler.
3. Design and draft a garment for a school going child.
4. Design and draft a lower garment with suitable adaptations of patterns as per design for pre teens.

c. Other Activities:

1. Seminar Topics:
 - Designing, drafting and fitting garments to various sizes.
 - Pattern making using software
 - Advancement in Body measurement tools

2. Visits: Visit a Designer wear workshop.
Visit to Garment Manufacturing Unit for Children's Wear.
3. Download videos related to simple pattern adaptations for Children's Garments.
4. Self-Learning Topics: Pattern Grading, Special Layouts.

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	15%	20%	20%	10%	25%	10%	20%
CO-2	20 %	20%	20%	10%	25%	20%	20%
CO-3	25%	20%	20%	25%	25%	20%	20%
CO-4	20%	20%	20%	25%	25%	20%	20%
CO-5	20%	20%	20%	30%	--	30%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

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

Note:

- The percentages 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 Number and Title	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Basics of Pattern Making	8	CO1	14	4	4	6
Unit- 2.0 Measurements	12	CO2	14	4	4	6
Unit- 3.0 Basic Bodice Blocks	6	CO3	14	4	4	6
Unit- 4.0 Pattern Details	10	CO4	14	4	4	6
Unit- 5.0 Children's Garments	12	CO5	14	4	4	6
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.	Vertical, Horizontal and Girth measurements on a human figure.	CO1, CO2	40	50	10
2.	Zabla's/ baby dresses for infants using standard measurements.	CO2, CO3, CO4	40	50	10
3.	Bloomer for infants using standard measurements.	CO2, CO3, CO4	40	50	10
4.	Sleeveless Romper/Jumper for a toddler.	CO2, CO3, CO4	40	50	10
5.	Full size Basic A line Bodice and Sleeve Block	CO2, CO3, CO4	40	50	10
6.	Adapt the A line bodice block of 3 years old to introduce round yoke in the front with pleats and straight yoke at the back with gathers and placket	CO3, CO4, CO5	40	50	10
7.	Adapt the basic Sleeve block of 3 years old into puff sleeves, leg o mutton sleeves & bell sleeves	CO3, CO4, CO5	40	50	10
8.	Peter-pan, Bertha, Sailor, Roll and Chinese Collars using draft for 3 year old	CO4, CO5	40	50	10
9.	Full size Boys shirt with patch pocket, collar & Plain Sleeve Block of Standard measurements. (3 years old boy)	CO2, CO3, CO4	40	50	10
10.	Full size Boys Shorts with front hip pockets and elasticized waistband behind.	CO2, CO3, CO4	40	50	10
11.	Full size Basic Bodice, Sleeve and Skirt block for pre-teens, using standard measurements.	CO2, CO3, CO4	40	50	10
12.	Plain sleeve for pre-teens into petal & circular flounce sleeve	CO4, CO5	40	50	10
13.	Basic skirt block for pre-teens into A- line, flared, gathered, tiered & circular skirts.	CO4, CO5	40	50	10
14.	Full size Basic Bodice (one dart), Sleeve and Skirt block with darts for women, using Standard measurements	CO2, CO3	40	50	10
15.	Full size Basic Bodice & Sleeve Block of Standard measurements for Gents.	CO2, CO3	40	50	10
16.	1/4th Scale size Basic Bodice (one dart), Sleeve and Skirt block with darts for women, using standard measurements.	CO2, CO3	40	50	10

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

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

P) Suggested Instructional/Implementation Strategies: Different Instructional/Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, 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 Tools & Equipments:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
1.	Measuring Tools & equipment.	Flexi tape, Measuring tape, rulers, L-scale, I/4th scale, Dress forms adjustable for ladies and gents.	1-16
2.	Drafting Equipment & Tracing Tools	Brown papers with grain line, Marking pens & pencils, Tacking pins, Tracing Wheel, Tailors Chalk, Dress maker's carbon Paper, Tracing Paper, French curve, trouser shapers, Large drafting tables.(72"*48"*30"l*b*h)	1-16
3.	Cutting Tools	Scissors, Pinking shear, Pattern notcher & Punches. A4 size double sided PVC self healing cutting mat with grid.	1-16

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

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Pattern making for fashion design.	Helen Joseph - Armstrong	5 th edition Pearson Education India ISBN- 13: 978-9332518117 ISBN- 10: 9332518114
2.	Fabric, form and flat pattern cutting	Winifred Aldrich	John Wiley & Sons ISBN- 13: 978-1405136204 ISBN- 10: 1405136200
3.	Dress Pattern Designing Classic edition)	Natalie Bray,	5 th edition Wiley Blackwell ISBN- 13: 978-0632065011 ISBN- 10: 063206501X
4.	Pattern Drafting For Dress Making	Pamela Stringer	B.T Batsford Ltd. London ISBN- 13: 978-0713469875 ISBN- 10: 0713469870
5.	Pattern Grading for Women's Cloths	Gerry Cooklin	Wiley –Blackwell ISBN- 13: 978-0632022953 ISBN- 10: 0632022957
6.	Metric Pattern Cutting for Women's wear	Winifred Aldrich	6 th Edition Wiley Blackwell ISBN- 13: 978-1444335057 ISBN- 10: 1444335057
7.	Metric Pattern cutting for Menswear	Winifred Aldrich	5 th edition Wiley Blackwell ISBN- 13: 978-1405182935 ISBN- 10: 1405182938
8.	Pattern Cutting for Women's Outerwear	Gerry Cooklin	John Wiley & Sons ISBN- 13: 978-0632037971 ISBN- 10: 0632037970
9.	Metric Pattern Cutting for Children's wear	Winifred Aldrich	4 th edition Wiley Blackwell ISBN- 13: 978-1405182928 ISBN- 10: 140518292X
10.	Pattern Making	Jeanne Powell, Carol Foley	Prentice Hall ISBN- 13: 978-0136542117 ISBN- 10: 0136542115

(b) Open Educational Resources:

1. <https://www.youtube.com/watch?v=3ayYkJVioZQ>
2. <https://www.youtube.com/watch?v=tGN1DcJ0qK0>
3. <https://www.youtube.com/watch?v=xR-59vVNaxU>

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

(c) Others:

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

- A) **Course Code** : 2400104 (T2400104/P2400104/S2400104)
- B) **Course Title** : Communication Skills (English) (Common for all Programmes)
- C) **Pre-requisite Course(s)** :
- D) **Rationale**

Communication forms a crucial element in the success of any organization or industry in the globalized economy. The global village gives due weightage to the English language and it enjoys a privileged status. Engineering students with English as a communicative language are open to many opportunities across the globe. This course will develop Listening, Speaking, Reading, and Writing Skills (LSRW) in the students for effective dissemination of their ideas, projects, patents, and research in the form of presentations, reports, research papers, memos, circulars, etc. Additionally, it will help students of diploma in engineering to present concepts and designs effectively along with writing CVs, Group Discussions, and Mock Interview sessions in placements and job recruitments. Though communication skills in SBTE, Bihar largely emphasizes to communicate effectively in English communication in Hindi is also focused to some extent at the diploma level. **Effective Communication can be easily learned through Indian mythological scriptures like Bhagwat Geeta, Ramayana, Mahabharata, and others. (IKS)**

- 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 classroom/ laboratory/ workshop/ field/ industry.

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

- CO-1** Communicate contextually in different situations.
- CO-2** Use Verbal Communication Effectively
- CO-3** Deploy Non-Verbal Communication Contextually.
- CO-4** Write various texts using vocabulary and correct grammar.
- CO-5** Draft effective business correspondence with brevity and clarity.

- 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	3		
CO-2	-	-	-	-	-	3	3		
CO-3	-	-	-	-	-	3	3		
CO-4	-	-	-	-	3	3	3		
CO-5	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 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				
2400104	Communication Skills (English)	03	-	04	02	09	06

Legend:

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

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

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

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

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

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

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

H) Assessment Scheme:

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)	
2400104	Communication Skills (English)	30	70	20	30	20	30	200

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.

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

J) **Theory Session Outcomes (TSOs) and Units: T2400104**

The details of TSOs and units for communication in English is mentioned in Part – A while communication in Hindi is mentioned in Part – B in the following table.

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
Part -A (English) TSO1.a Define communication and its different forms. TSO1.b Explain the elements of communication with Case Studies from Bhagwat Geeta's conversation between Krishna and Arjun before the war. (IKS) TSO1.c Explain the linkages between different stages of communication with the help of a diagram. TSO1.d Apply the principles of effective communication and state two examples of communication from Ramayana (IKS) TSO1.e State eight for explaining different types of barriers to communication Case Studies from Mahabharata - the conversation between Kauravas and Pandavas in the war field (IKS) TSO1.f Identify the barriers to communication. TSO1.g Suggest the ways to overcome/minimize communication barriers.	Unit-1.0 Communication 1.1 Communication: Role, Relevance, Elements (Context-Sender-Message-Channel-Receiver-Feedback) 1.2 Process / Stages: Ideation- Encoding, Selecting Proper Channel, Transmission, Receiving, Decoding, Giving Feedback 1.3 7 Cs / Principles of Effective Communication: Considerate, Correct, Concrete, Concise, Clear, Complete. Courteous 1.4 Barriers to Communication: Physiological, Physical, Psychological, Mechanical, Semantic/Language, Cultural. Overcome/ minimize Barriers. 1.5 Case Studies from: - Bhagwat Geeta's conversation between Krishna and Arjun before the war (IKS) - Mahabharata the conversation between Kauravas and Pandavas in the war field (IKS)	CO1 CO2
TSO 2a. Distinguish between formal and informal communication Case Studies from Bhagwat Geeta and the different conversations of Krishna and Arjun during the war (IKS). TSO 2b. Illustrate the types of Formal Communication with examples. TSO 2c. Define verbal & non-verbal communication. TSO 2d. TSO 2d. Explain the advantages of oral and written Communication. TSO 2e. Interpret non-verbal codes from Mahabharata (IKS) TSO 2f. Explain the role of tables, charts & graphs in communication. TSO 2g. Differentiate Intrapersonal and Interpersonal Communication with Case Studies	Unit- 2.0 Types of Communication 2.1 Based on organizational structure: Formal (Vertical, Horizontal, Diagonal), Informal (Grapevine) 2.2 Based on the method of expression: Verbal-Oral & Written communication. Non-verbal communication and its Codes- Kinesics, Chronemics, Proxemics, Haptics, Vocalics/Paralanguage, Artifacts, Graphic and Visual Communication 2.3 Based on the number of people involved: Interpersonal, and Group Communication.	CO3

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 2h. List the advantages and disadvantages of Group Communication.	2.4 Case Studies from Bhagwat Geeta's different conversations with Krishna and Arjun during the war (IKS).	
TSO 3a. Prepare a glossary of new words from the given texts. TSO 3b. Summarize the given texts in your own words. TSO 3c. Recognize the types of sentences in the given texts. TSO 3d. Find out idioms and phrases used in the given texts. TSO 3e. Write a short biography of the given writers. TSO 3f. Identify the figures of speech used in the given texts. TSO 3g. Classify the forms of poetry. TSO 3h. Elaborate the central idea / theme of the given poems in your own words.	Unit-3.0 Reading Comprehension Comprehension, vocabulary enhancement and grammar exercises based on the reading of the following texts: Section-1 (Prose) 3.1 An Astrologer's Day by R K Narayan 3.2 Indian Civilization and Culture by M K Gandhi 3.3 The Secret of Work by Swami Vivekanand 3.4 My Struggle for an Education by Brooker T Washington Section-2 (Poetry) 3.5 Where the Mind is without Fear by R N Tagore 3.6 Ode on Solitude by Alexander Pope 3.7 Stopping by Woods on a Snowy Evening by Robert Frost 3.8 A Psalm of Life by H W Longfellow	CO4 CO5
TSO 4a. Form new words adding prefix and suffix to the given root words. TSO 4b. Write synonyms and antonyms of the given words. TSO 4c. Use the given idioms and phrases in your own sentences. TSO 4d. Distinguish between acronym and abbreviation. TSO 4e. Prepare a list of technical jargons of your respective branch. TSO 4f. Identify the parts of speech of the specific words in the given sentences. TSO 4g. Fill in the blanks with suitable verb forms in the given sentences. TSO 4h. Transform the given sentences as directed. TSO 4i. Punctuate the given paragraphs.	Unit-4.0 Vocabulary and Grammar 4.1 Word Formation: Prefix, Suffix, Acronym 4.2 Synonyms, Antonyms, Homonyms, One Word Substitution, Idioms and Phrases 4.3 Technical Jargons -Related to the respective program 4.4 Parts of speech 4.5 Time and Tense 4.6 Transformation: Voice, Narration, Removal of 'Too', Question Tag 4.7 Punctuation	CO4, CO5
TSO 5a. Write the precis of the given passage with suitable title. TSO 5b. Draft letters and applications for the given purpose. TSO 5c. Compose E-mails, Notices, Memos, and Circulars. TSO 5d. Prepare reports of the projects of your respective branch. TSO 5e. Write a report on the events organized in your institute.	Unit-5.0 Professional Writing 5.1 Precis Writing 5.2 Business Letters / Applications 5.3 Drafting E-mails, Notices, Memos, Circulars 5.4 Report Writing: Project and Event/ Incident Report Writing	CO5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
Part -B (हिंदी) <i>TSO 1a</i> सम्प्रेषण कौशल का अर्थ स्पष्ट कर सकेंगे. <i>TSO 1b</i> भाव एवं सम्प्रेषण में अंतर बता पाएँगे. <i>TSO 1c</i> सम्प्रेषण की प्रक्रिया का उल्लेख कर सकेंगे. <i>TSO 1d</i> श्रवण अविद्यमान, वाचन और लेखन की अवधारणा को स्पष्ट कर सकेंगे. <i>TSO 1e</i> सम्प्रेषण कौशल के निर्धारक तत्वों का विवेचन कर सकेंगे. <i>TSO 1f</i> प्रभावशाली सम्प्रेषण के सिद्धांतों का समावेश अपने वार्तालाप में कर सकेंगे.	Units-1.0: सम्प्रेषण सिद्धान्त एवं व्यवहार 1.1 सम्प्रेषण : परिचय , अर्थ एवं परिभाषा 1.2 सम्प्रेषण की प्रक्रिया एवं तत्त्व 1.3 सम्प्रेषण के प्रकार : औपचारिक एवं अनौपचारिक, शाब्दिक एवं अशाब्दिक 1.4 प्रभावशाली सम्प्रेषण के सिद्धांत एवं सम्प्रेषण व्यवधान कुरुक्षेत्र में श्रीकृष्ण- अर्जुन संवाद महाभारत युद्ध प्रारम्भ होने से पहले कुरुक्षेत्र में श्री कृष्ण ने अर्जुन के प्रश्नों के उत्तर देते हुए जीवन के सूत्र समझाए थे। ये उपदेश श्रीमद्भागवत गीता में मिलते	CO1, CO2, CO3
<i>TSO 2a</i> तकनीकी कौशल एवं व्यवहार कौशल में अन्तर बता पाएँगे . <i>TSO 2b</i> व्यवहार कौशल का महत्व स्पष्ट कर पाएँगे . <i>TSO 2c</i> आत्म जागरूकता एवं आत्म विश्लेषण का विवेचन सोदाहरण कर पाएँगे . <i>TSO 2d</i> भावनात्मक बुद्धिमत्ता एवं करुणा, अनुकूलनशीलता एवं लचीलापन का विकास कर पाएँगे. <i>TSO 2e</i> दैनिक जीवन में अनुकूलनशीलता एवं लचीलापन को आत्मसात कर पाएँगे .	Unit-2.0: व्यावसायिक उत्कृष्टता हेतु व्यवहार कौशल 2.1 परिचय : तकनीकी कौशल एवं व्यवहार कौशल 2.2 व्यवहार कौशल का महत्त्व 2.3 जीवन कौशल : आत्म जागरूकता एवं आत्म विश्लेषण 2.4 वनात्मक बुद्धिमत्ता एवं करुणा, अनुकूलनशीलता एवं लचीलापन, व्यवहार कौशल का उपयोग श्रीराम केवट संवाद श्रीराम जब लक्ष्मण और सीता के साथ वन गमन के लिए प्रस्थान करते हैं तब सरयू नदी के पार उतारने लिए केवट से अनुरोध करते हैं।	CO1
<i>TSO 3a</i> पठित गद्यांश एवं पद्यांश से प्राप्त नयी शब्दावली विकसित कर पाएँगे <i>TSO 3b</i> दिए गये कहानियों, कविताओं एवं निबंधों का सारांश अपने शब्दों में लिख पाएँगे. <i>TSO 3c</i> दिए गये कहानियों, कविताओं एवं निबंधों में प्रयुक्त मुहावरों एवं अलंकारों को बता पाएँगे . <i>TSO 3d</i> कविताओं का भावार्थ स्पष्ट कर पाएँगे .	Unit-3.0: पाठ-बोध : शब्दावली परिवर्धन एवं व्याकरण अभ्यास 3.1 नमक का दरोगा, ईदगाह – मुंशी प्रेमचंद 3.2 बात (निबंध)- प्रताप नारायण मिश्र 3.3 वह प्रदीप जो दिख रहा है झिलमिल दूर नहीं है – रामधारी सिंह दिनकर 3.4 नर हो न निराश करो मन को – मैथिलीशरण गुप्त 3.5 कबीर के दोहे -काल्ह करे सो आज कर , जाति न पूछो साधू की , ऐसी वाणी बोलिए	CO4
<i>TSO 4a</i> अपनी शाखा से सम्बन्धित तकनीकी शब्दावली का चयन कर पाएँगे . <i>TSO 4b</i> पर्यायवाची एवं विलोम शब्दों से सम्बंधित शब्दावली तैयार कर सकेंगे . <i>TSO 4c</i> दिये गये गद्यांशों में विराम चिह्नों का सही प्रयोग कर पाएँगे .	Unit-4.0: शब्दावली एवं व्याकरण 2 Hrs 4.1 सामान्य शब्दावली 4.2 प्रशासनिक शब्दावली 4.3 शब्द भेद, अनेक शब्दों के लिए एक शब्द 4.4 विराम चिन्ह 4.5 मुहावरें एवं कहावतें	CO4 CO5
<i>TSO 5a</i> दिए गये दिए गये गद्यांशों का संक्षेपण कर पाएँगे . <i>TSO 5b</i> विभिन्न प्रकार के पत्रों, आवेदनों ,सूचनाओं, विज्ञप्तियों को लिख पाएँगे . <i>TSO 5c</i> अपनी शाखा से सम्बंधित प्रतिवेदन लेखन कर पाएँगे . <i>TSO 5d</i> अपने संस्थान में हुए आयोजनों का प्रतिवेदन	Unit-5.0: लेखन कौशल 5.1 सार- लेखन 5.2 औपचारिक एवं व्यवसायिक पत्र लेखन 5.3 प्रारूप लेखन – सूचना, निविदा लेखन, प्रतिवेदन लेखन, बायोडाटा	CO5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
लिख पाएँगे.		

Note: One major TSO may require more than one theory session/period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2400104

These practical's are common for both Part – A and Part -B.

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO1.a Identify the emotions of the speakers.	1	Emotions of the speakers.	CO1
LSO2.a Interpret instructions of audio transcripts.	2	Instructions of audio transcripts.	CO1
LSO3.a Solve the language puzzles based on the audio transcript.	3	Language puzzles.	CO1
LSO4.a Repeat words on language lab software after listening to them.	4	Repetition of words	CO1
LSO5.a Summarize the excerpt in their own words.	5	Summarize the excerpt.	CO1
LSO6.a Answer the questions based on the listening excerpt	6	Listening excerpt	CO2
LSO7.a Differentiate the sounds of minimal pairs, syllables, words, etc.	7	Sounds of minimal pairs, syllables words etc.	CO2
LSO8.a Pronounce the words/ sentences correctly based on the phonetic transcription.	8	Phonetic transcription.	CO2
LSO9.a Read out the words and sentences based on stress and intonation marks.	9	Stress and intonation.	CO2
LSO10.a Apply the paralanguage codes in verbal dialogues to show different emotions.	10	Paralanguage Codes	CO2
LSO11.a Integrate the non-verbal codes in their verbal dialogues.	11	Non-verbal Codes	CO2
LSO12.a Correct the verbal and non-verbal presentations of their peer while giving feedback.	12	Feedback on Presentations	CO2
LSO13.a Differentiate the sounds of minimal pairs, syllables, words, etc.	13	Syllables and Words	CO2
LSO14.a Locate the dictated words from the excerpt.	14	Dictated words	CO3
LSO15.a Arrange the correct and logical sequence of the jumbled sentences.	15	Jumbled Sentences.	CO3
LSO16.a Read the given texts aloud with proper pauses and proper pronunciation.	16	Pronunciation.	CO3
LSO17.a Compare the point of view with their peers.	17	Point of view of Self and Peers	CO4
LSO18.a Identify the main ideas of the excerpt	18	Main ideas of the excerpt	CO4
LSO19.a Prepare a list of technical jargon and register specific to their program /industry.	19	Technical Jargons	CO5
LSO20.a Write the specifications of the machines/ equipment available in the workshops/labs.	20	Specifications of the machines/ equipment	CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
LSO21.a Write a report on the projects of their respective branches.	21	Report on the Projects	CO5

M) Suggested Term Work and Self-Learning: S2400104

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 in line with the targeted COs.

1. Visit your institute's library/ web search and enlist the books, journals, and magazines related to your respective branches to prepare a bibliography consisting of names of the authors, titles of the books, publication, and place of publication.
2. SWOT Analysis: Analyze yourself concerning your strengths and weaknesses, opportunities, and threats for your communication.
3. Interview an eminent personality and write a report on it.
4. Deliver a seminar for 10-12 minutes using PPT on the topic given.
5. Prepare your timetable for a week and prioritize your activities.
6. Visit any historical places/offices/farms/industries/development sites etc. near your city and prepare a report on it.
7. Prepare a video of effective professional communication after listening to Bhagwat Geeta's conversation between Arjun and Krishna in the war field (IKS).

b. Micro Projects:

- i. Book review – students should read a book and then write their reviews about the book and present it in the class.
- ii. Interview any successful person in your locality in context with his life journey, inspiration social contribution, role model, and keys to success.
- iii. Prepare a register of technical jargon of the industry related to their specific branch.
- iv. Prepare a presentation on environmental issues of their locality with their solution.
- v. Listen to the dialogues of the conversation between Krishna and Arjun before the war for specific and effective Communication (IKS)

c. Other Activities:

1. Arrange a Blood Donation Camp in collaboration with a blood bank and prepare a communication plan for the same.
2. Organize a cleanliness campaign in your campus premises and nearby places and prepare hoardings, boards, collages, and posters for the same.
3. Organize a campaign on educational awareness in the nearby places and prepare an advertising campaign for the same.

d. Self- learning topics:

- Listen to different Conversations of Ramayana,(the Rama -Bharat conversation before going to

Vanvaas) Mahabharata (Bheem and Arjun Conversation during War), and Bhagwat Geeta (discussions of Strategies before War) to develop effective communication Skills (IKS)

- Collect new words from daily newspapers.
- Observe negotiation skills in the nearby shops.
- Watch educational channels for improving English communication.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use the 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. This matrix has been prepared considering both Part – A and Part -B.

COs (Includes in Part -A & B)	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%	-	20%	20%
CO-2	10%	15%	10%	20%	25%	10%	20%
CO-3	20%	25%	15%	20%	25%	15%	20%
CO-4	25%	20%	30%	20%	25%	15%	20%
CO-5	30%	20%	30%	20%	25%	40%	20%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

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

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentages 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)	Unders tanding (U)	Application & above (A)
(Part - A)						
Unit-1.0 Communication Theory and Practice	5	CO1, CO2	10	3	3	4
Unit- 2.0 Types of Communication	5	CO3	8	2	2	4
Unit-3.0 Reading Comprehension	8	CO4, CO5	12	3	3	6
Unit-4.0 Vocabulary and Grammar	7	CO4, CO5	10	3	3	4

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-5.0 Professional Writing	7	CO5	10	3	4	3
(Part-B) Units-1.0: सम्प्रेषण सिद्धान्त एवं व्यवहार	2	CO1, CO2	3	1	1	1
Unit-2.0: व्यावसायिक उत्कृष्टता हेतु व्यवहार कौशल	2	CO3	3	1	1	1
Unit-3.0: पाठ-बोध :शब्दावली परिवर्धन, एवं व्याकरण अभ्यास	5	CO4, CO5	5	1	1	3
Unit-4.0: शब्दावली एवं व्याकरण	4	CO5	5	1	1	3
Unit-5.0: लेखन कौशल	3	CO5	4	2	1	1
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	Emotions of the Speakers.	CO1	30	60	10
2	Instructions of Audio Transcripts.	CO1	30	60	10
3	Language Puzzles.	CO1	30	60	10
4	Repetition of Words.	CO1	30	60	10
5	Summarize the Excerpts.	CO1	30	60	10
6	Listening Excerpts.	CO2	30	60	10
7	Sounds of minimal Pairs, Syllables and Words etc.	CO2	30	60	10
8	Phonetic Transcription.	CO2	30	60	10
9	Stress and Intonation.	CO2	30	60	10
10	Paralanguage Codes	CO2	30	60	10
11	Non-Verbal Codes	CO2	30	60	10

S. No.	Laboratory Practical Titles	Relevant COs Number (s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
12	Verbal and Non-Verbal Presentations	CO2	30	60	10
13	Sounds of minimal pairs, syllables and words	CO2	30	60	10
14	Locate the Dictated Words	CO3	30	60	10
15	Jumbled Sentences.	CO3	30	60	10
16	Pronunciation.	CO3	30	60	10
17	Compare the Point of view with their Peers.	CO4	30	60	10
18	Main Ideas of the Excerpt	CO4	30	60	10
19	Technical Jargons	CO5	30	60	10
20	Specifications of the machines/ equipment	CO5	30	60	10
21	Report on the Projects	CO5	30	60	10

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

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

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/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	Intel® Core™ i5-9400 (6-Core, 9MB Cache, up to 4.1GHz with Intel® Turbo Boost Technology) RAM: 8GB DDR 4 HDD: 3.5" 1TB 7200RPM SATA Hard Drive OS: Windows 10 Pro 64bit OEM License Other ports: Gigabyte LAN card	1 to 21
2.	Language Lab software	Teacher console supporting audio-visual language lab	1 to 21
3.	Printer	LaserJet printer	1 to 21
4.	Head Phones with microphones	Logitech H111 wired on headphones	1 to 21

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
5.	Computer Furniture	Computer Desk, chair	1 to 21
6.	Smart Projector	Standard Specification	1 to 21

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Communication Skills in English (AICTE Prescribed Text Book)	Dr. Anjana Tiwari	Khanna and Khanna, New Delhi
2.	Business Communication	Dr. Nishith Rajaram Dubey, Anupam Singh	Publisher: Indra Publishing House, 2023 ISBN- 978-93-93577-69-6
3.	Communication Skills	Sanjay Kumar & Pushap Lata	Oxford University Press, India
4.	Employability Skills	Dr. Nishith Rajaram Dubey, Anupam Singh	Indra Publishing House, 2023 ISBN - 978-93-93577-68-9
5	Technical Communication for Engineers	Shalini Verma	S. Chand
6.	English Grammar	Raymond Murphy	S. Chand
7.	British English Grammar and Composition	Dr. Ashok Kumar Singh	Student's Friends
8.	A Textbook of English Phonetics	T. Balasubramanian	Macmillan Publishers
9.	Thesaurus of English Words and Phrases	Roget	Simon and Schuster
10	Better English Pronunciation	J. D. O'Connor	Cambridge: Cambridge University Press, 1980
11	An English Grammar: Comprehending Principles and Rules	Lindley Murray.	London: Wilson and Sons, 1908.
12	Effective Communication Skills	Kulbhushan Kumar	Khanna Publishing House, New Delhi (Revised Edition 2018)
13	Examine your English	Margaret M. Maison	Orient Longman: New Delhi, 1964
14	Collin's English Dictionary	Harper Collins	Harper Collins, Glasgow
15	संप्रेषण कौशल	डॉ प्रवीण कुमार अग्रवाल , डॉ अवनीश कुमार मिश्रा	साहित्य भवन पब्लिकेशन : आगरा
16	आधुनिक हिंदी व्याकरण और रचना	डॉ वासुदेवनंदन प्रसाद	भारती भवन पब्लिकेशन

(b) Online Educational Resources:

1. https://www.academia.edu/37871134/COMMUNICATION_SKILLS_1ST_YR_2_pdf
2. [https://socialsci.libretexts.org/Courses/Butte_College/Exploring_Intercultural_Communication_\(Grothe\)/05%3A_Nonverbal_Processes_in_Intercultural_Communication/5.02%3A_Types_of_Nonverbal_Communication](https://socialsci.libretexts.org/Courses/Butte_College/Exploring_Intercultural_Communication_(Grothe)/05%3A_Nonverbal_Processes_in_Intercultural_Communication/5.02%3A_Types_of_Nonverbal_Communication)
3. <http://muhamadjaelani35.blogspot.com/2014/11/inquiry-letter-order-letter-complaint.html?m=1>
4. <https://www.slideshare.net/sundaredu/barriers-of-communication-53545680>
5. <https://allpoetry.com/where-the-mind-is-without-fear>
6. <https://www.poetryfoundation.org/poems/46561/ode-on-solitude>
7. <https://www.poetryfoundation.org/poems/44644/a-psalm-of-life>
8. <https://www.poetryfoundation.org/poems/42891/stopping-by-woods-on-a-snowy-evening>
9. <https://www.hindisamay.com/content/>
10. <http://kavitakosh.org/>
11. <https://bundelkhand.in/maithilisharan-gupt/nar-ho-na-nirash-karo-man-ko>
12. <https://etc.usf.edu/lit2go/92/up-from-slavery/1575/chapter-3-the-struggle-for-an-education/>
13. <https://oursmartstudy.com/english-chapter-1-class-12-pdf-download/>
14. [https://ve-iitg.vlabs.ac.in/Listening%20Skills\(Procedure\).html](https://ve-iitg.vlabs.ac.in/Listening%20Skills(Procedure).html)
15. <https://nptel.ac.in/courses/109104031>

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://nptel.ac.in/courses/>

- A) **Course Code** : 2452206 (P2452206/S2452206)
- B) **Course Title** : Sewing Workshop
- C) **Pre- requisite Course(s)** : Fundamentals of Garment Technology
- D) **Rationale** :

Sewing is one of the most important process in garment manufacturing. Garments are made by stitching various components together according to pattern using needle and thread, by hand or sewing machine. It involves formation of different types of stitches and seams to join different component and thereby conversion of individual parts into a final garment. This basic practical course will provide hands on experience of running the sewing machine efficiently and the method of constructing various stitches and seams involved in garment manufacturing process. The knowledge gained through this course will help the students to take up advanced garment manufacturing course in next semester.

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

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

- CO-1** Select suitable type of stitching machine used for formation of particular seam/stitches.
- CO-2** Perform sewing operation efficiently to join different components of a garment using industrial sewing machine.
- CO-3** Construct suitable stitches as per requirement for a given garment.
- CO-4** Produce various types of seams as per requirement for a given garment.
- CO-5** Develop styles of garments using various combination of seams and Stitches.

- 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	-	-	3	2	2	3	-	-
CO-3	3	-	-	3	2	2	2	-	-
CO-4	3	-	-	3	2	2	2	-	-
CO-5	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:

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				
2452206	Sewing Workshop	-	-	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:

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)	
2452206	Sewing Workshop	-	-	20	30	20	30	100

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.

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: P2452206**

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Identify the different parts of sewing machine. <i>LSO 1.2.</i> Apply Safety Precautions while handling the tools.	1.	Basic Sewing machine and their function	CO1
<i>LSO 2.1.</i> Run the sewing machine <i>LSO 2.2.</i> Perform the below functions on sewing machine a. Needle changing b. Bobbin winding and Changing c. Threading d. Stitch Formation <i>LSO 2.3.</i> Apply Safety Precautions while running the sewing machine.	2.	Preparatory operations on Sewing Machine	CO1
<i>LSO 3.1.</i> Run the sewing machine effectively. <i>LSO 3.2.</i> Demonstrate the speed control on sewing machine. <i>LSO 3.3.</i> Apply Safety Precautions while running the sewing machine.	3.	Sewing Machine operation	CO1, CO2
<i>LSO 4.1.</i> Perform the stitch formation on sewing machine effectively. <i>LSO 4.2.</i> Modify the stitch setting. <i>LSO 4.3.</i> Apply Safety Precautions while running the sewing machine	4.	Stitch formation on Sewing Machine	CO1, CO2, CO3
<i>LSO 5.1.</i> Identify the different parts of over lock machine. <i>LSO 5.2.</i> Explain the function of different parts of overlock machine. <i>LSO 5.3.</i> Apply Safety Precautions while handling the tools.	5.	Over lock machine and their function	CO1
<i>LSO 6.1.</i> Run the over lock machine effectively. <i>LSO 6.2.</i> Modify the stitch setting. <i>LSO 6.3.</i> Apply Safety Precautions while running the sewing machine	6.	Over lock machine operation	CO1, CO2, CO3
<i>LSO 7.1.</i> Construct the Plain seam and self-enclosed seam <i>LSO 7.2.</i> Produce an assembly of fabric using plain seam.	7.	Seams formation: Plain Seam, Self-Enclosed seams.	CO2, CO3, CO4
<i>LSO 8.1.</i> Produce an assembly of fabric using different type of seam. <i>LSO 8.2.</i> Design different assembly of fabric using combination of seams. <i>LSO 8.3.</i> Produce flexible plastic structure using available 3D printer.	8.	Seams formation: Top stitched seams, Corded Seam, Decorative seams	CO2, CO3, CO4, CO5

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 9.1.</i> Assemble different types of pockets as per requirement using different stitching method.	9.	Pocket Preparation	CO4, CO5
<i>LSO 10.1.</i> Construct different cased structure in a garment Assembly: • Casing with Drawstring • Casing with elastic • Casing with heading • Inside applied casing • Outside applied casing	10.	Production of Cased material	CO5
<i>LSO 11.1.</i> Produce a particular fastener type as per requirement. <i>LSO 11.2.</i> Design a garment with different type of fastener.	11.	Fixing of fasteners	CO5

L) Suggested Term Work and Self Learning: S2452206

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 a list of self-employment opportunity in the area of sewing machine maintenance and repair. Convert this into street plays and perform few shows in the public for awareness. Video record the street play and spread it through social media.
2. Prepare a list of safety rules to be followed in sewing machine operation. Convert this into street plays and perform few shows in the public for awareness. Video record the street play and spread it through social media.
3. Collect the specifications of different sewing machine used in garment industry and prepare a comprehensive report.

b. Micro Projects:

1. Perform the production of 5 different types of seams used in different women's wear and estimate the cost of the same.
2. Download 5 videos on different types of sewing machines, watch them and write a report to detail out the steps involved, complexity involved, post processing steps used and their advantages and disadvantages.
3. Collect the Brochure of 5 Different types of industrial sewing machine and compare their specification and based on that determine their suitability for different type of garment.
4. Collect 5 different type of garment from local market and identify different types of seams and stitches present in the garment and reproduce these stitches in sample fabric based on sewing machine available in the lab.

c. Other Activities:

1. Seminar Topics:
 - Commercially available Sewing Machines for Garment Industry.
 - Classification of Seam and stitches and their application.

- Production of elasticated cover seam.
 - Modern Casing Technique in Garment Industry
2. Visits: Visit nearby Garment Industry having Sewing facilities. Prepare report of visit with special comments on different Sewing machine used, material used, Seam used, Stitch type used, Production Process used and cost of production.
3. Self-Learning Topics:
- Stitching of flexible elastic components in Garment.
 - Advancement in modern sewing machine.
 - Decoration of Garments using Different seams and stitches.

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%	-	20%	20%
CO-2	-	-	10%	20%	10%	15%	20%
CO-3	-	-	15%	20%	30%	15%	20%
CO-4	-	-	30%	20%	30%	15%	20%
CO-5	-	-	30%	20%	30%	35%	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 percentages 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.	Basic Sewing machine and their function	CO1	50	40	10
2.	Preparatory operations on Sewing Machine	CO1	50	40	10
3.	Sewing Machine operation	CO1, CO2	50	40	10
4.	Stitch formation on Sewing Machine	CO1, CO2, CO3	50	40	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
5.	Over lock machine and their function	CO1	50	40	10
6.	Over lock machine operation	CO1, CO2, CO3	50	40	10
7.	Seams formation: Plain Seam, Self-Enclosed seams.	CO2, CO3, CO4,	50	40	10
8.	Seams formation: Top stitched seams, Corded Seam, Decorative seams	CO2, CO3, CO4, CO5	50	40	10
9.	Pocket Preparation	CO4, CO5	50	40	10
10.	Production of Cased material	CO5	50	40	10
11.	Fixing of fasteners	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.	Sewing Machine – Single Needle Lock stitch Industrial model	Juki/Singer Standard Industrial model sewing machine	1,2,3,4,7,8,9, 10
2.	Over Lock Machine 3 Thread	Juki/Singer Standard Industrial model machine	5,6
3.	Over Lock Machine 5 Thread	Juki/Singer Standard Industrial model machine	5,6
4.	Blind Stitching Machine	Juki/Singer Standard Industrial model machine	7, 8, 10
5.	Button Hole Machine	Juki/Singer Standard Industrial model machine	11
6.	Bar Tacking Machine	Juki/Singer Standard Industrial model machine	9
7.	Safety Stitch Machine	Juki/Singer Standard Industrial model machine	8
8.	Zig Zag Multi Purpose Machine	Juki/Singer Standard Industrial model machine	2,8, 9

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
9.	Needles	Swing machine needle set	All
10.	Scissors	25 cm	All
11.	Thimble	Standard	All
12.	Seam Reaper	Standard	All
13	Measuring tools	Measuring Tape, Steel Sclae	All

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	The Technology of clothing Manufacture	Barbara Latham Carr Herald	Wiley-Blackwell, 2008 ISBN: 978-1405161985
2.	Introduction to Clothing Manufacture	Gerry Cooklin, Steven George Hayes (Editor), John McLoughlin (Editor)	Wiley-Blackwell, 2006 ISBN: 978-0-632-05846-4
3.	Sewing for Apparel Industry	Shaeffer Claire	Pearson Publications, 2000, ISBN No.13: 978-0131884434
4.	Industry Clothing Construction Methods	Aitken Leila	BBC Books , 1992, England ISBN No. 9781409352617
5.	Step by step dress making course	Liza Wallach Kloski, Nick Kloski	Make Community, LLC; 2nd edition, 2021 ISBN: 9781680450200

(b) Online Educational Resources:

1. [https:// textilefashionstudy.com/basic-components-of-garment-sewing/](https://textilefashionstudy.com/basic-components-of-garment-sewing/)
2. [https:// https://www.skillshare.com/en/browse/garment-production](https://www.skillshare.com/en/browse/garment-production)
3. [https:// https://www.udemy.com/course/analyse-garment-construction-z/](https://www.udemy.com/course/analyse-garment-construction-z/)
4. [https:// https://www.oxfordhomestudy.com/courses/fashion-courses-online/fashion-designing-online-courses-free](https://www.oxfordhomestudy.com/courses/fashion-courses-online/fashion-designing-online-courses-free)
5. <https://www.youtube.com/watch?v=8EJDdSj4OS0>
6. <https://www.youtube.com/watch?v=k4qtgJvlluk>
7. <https://www.youtube.com/watch?v=zK9h8ByMcvG>
8. <https://www.youtube.com/watch?v=HoY7kpQrWtU>

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.juki.co.jp/industrial_e/products_e/manual.php
2. The Colette Sewing Handbook: 5 Fundamentals for a Great Sewing Experience; Sarai Mitnick; Krause Publications; 1st edition, 2011
3. <https://manuals.plus/juki/l-1c-industrial-sewing-machine-manual#axzz7wQy9OJ00>
4. <https://www.ageberry.com/sewing-basics-use-sewing-machine/>
5. The Sewing Book: An Encyclopedic Resource of Step-by-Step Techniques
6. Lab Manuals

- A) **Course Code** : **2418107 (P2418107/S2418107)**
- B) **Course Title** : **ICT Tools**
(CE, ME, ME (Auto), FTS, CSE, AIML, MIE, CRE, CHE, FPP, TE, CACDDM, GT)
- C) **Pre- requisite Course(s)** :
- D) **Rationale** :

Besides working in technical environment in their profession, diploma pass outs may also get involved in routine office task related to creating business documents, perform data analysis and its graphical representations, making presentations. In order to carry-out these works, the students need to learn various desk-top based and internet-based software tools such as- office automation applications like word processing, spreadsheets and presentation tools. They also need to use these tools for making their project reports and presentations during their graduation programme. The objective of this course is to develop the basic competency in students for using these office automation tools to accomplish the job.

- 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** Prepare business document using word processing tool.
- CO-2** Manipulate data and represent it graphically using spreadsheet.
- CO-3** Prepare professional slide-based presentations.
- CO-4** Work effectively with Internet and basic web services

- 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	2	2	-	2	-		
CO-2	2	2	2	2	-	1	-		
CO-3	1	2	2	2	-	-	-		
CO-4	1	2	2	2	3	1	2		

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

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

G) Teaching & Learning Scheme:

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				
2418107	ICT Tools	-	-	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:

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)	
2418107	ICT Tools	-	-	20	30	20	30	100

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.

- 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 Word Processing 1.0 Word Processing: Overview of Word processor Basics of Font type, size, colour, Effects like Bold, italic, underline, Subscript and superscript, Case changing options, previewing a document, saving a document, closing a document and exiting application. 1.1 Editing a Document: Navigate through a document, Scroll through text, Insert and delete text, Select text, Undo and redo commands, Use drag and drop to move text, Copy, cut and paste, Use the clipboard, Clear formatting, Format and align text, Formatting Paragraphs, Line and paragraph spacing, using FIND and REPLACE, Setting line spacing, add bullet and numbers in lists, add borders and shading, document views, Page settings and margins, Spelling and Grammatical checks 1.2 Changing the Layout of a Document: Adjust page margins, change page orientation, Create headers and footers, Set and change indentations, Insert and clear tabs. 1.3 Inserting Elements to Word Documents: Insert and delete a page break, Insert page numbers, Insert the date and time, Insert special characters (symbols), Insert a picture from a file, Resize and reposition a picture 1.4 Working with Tables: Insert a table, Convert a table to text, Navigate and select text in a table, Resize table cells, Align text in a table, Format a table, Insert and delete columns and rows, Borders and shading, Repeat table headings on subsequent pages, Merge and split cells. 1.5 Working with Columned Layouts and Section Breaks: a Columns, Section breaks, Creating columns, Newsletter style columns, Changing part of a document layout or formatting, Remove section break, Add columns to remainder of a document, Column widths, Adjust column spacing, Insert manual column breaks.	CO-1

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
—	Unit-2.0 Spreadsheets 2.1 Working with Spreadsheets: Overview of workbook and worksheet, Create Worksheet Entering data, Save, Copy Worksheet, Delete Worksheet, Close and open Workbook. 2.2 Editing Worksheet: Insert data, adjust row height and column width, delete, move data, insert new rows and columns, Copy and Paste content, Find and Replace, Spell Check, sheet view Zoom In-Out, insert Special Symbols, Insert Comments, Add Text Box, Undo-redo Changes, - Freeze Panes, hiding/unhiding rows and columns. 2.3 Formatting Cells and sheet: Setting Cell Type, Setting Fonts, Text options, Rotate Cells, Setting Colors, Text Alignments, Merge and Wrap, apply Borders and Shades, Sheet Options, Adjust Margins, Page Orientation, insert Header and Footer, Insert Page Breaks, Set Background. 2.4 Working with Formula: Creating Formula, absolute and relative cell references, Copying and pasting Formula, Common spreadsheet Functions such as sum, average, min, max, date, In, And, or, mathematical functions such as sqrt, power, statistical functions, applying conditions using IF. 2.5 Working with Charts: Introduction to charts, overview of different types of charts, Bar, Pie, Line charts, creating and editing charts. Using different chart options: chart title, axis title, legend, data labels, Axes, grid lines, moving chart in a separate sheet. 2.6 Advanced Operations: Applying Conditional Formatting, Data Filtering, Data Sorting, Using Ranges, Data Validation, Adding Graphics, Printing Worksheets, print area, margins, header, footer and other page setup options.	CO-2
—	Unit-3.0 Presentation Tool 3.1 Creating a Presentation: Outline of an effective presentation, Identify the elements of the User Interface, Starting a New Presentation Files, Creating a Basic Presentation, Working with textboxes, Apply Character Formats, Format Paragraphs, View a Presentation, Saving work, creating new Slides, Changing a slide Layout, Applying a theme, Changing Colours, fonts and effects, apply custom Colour and font theme, changing the background, Arrange Slide sequence, 3.2 Inserting Media elements: Adding and Modifying Graphical Objects to a Presentation - Insert Images into a Presentation, insert audio clips, video/animation, Add Shapes, Add Visual Styles to Text in a Presentation, Edit Graphical Objects on a Slide, Format Graphical Objects on a Slide, Group Graphical Objects on a Slide, Apply an Animation Effect to a Graphical Object, Add Transitions, Add Speaker Notes, Print a Presentation. 3.3 Working with Tables: Insert a Table in a Slide, Format Tables, and Import Tables from Other Office Applications. 3.4 Working with Charts: Insert Charts in a Slide, modify a Chart, Import Charts from Other Office Applications.	CO-3

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
–	Unit-4.0 Basics of Internet 4.1 World Wide Web: Introduction, Internet, Intranet, URL, web servers, basic settings of web browsers- history, extension, default page, default search engine, privacy and security, creating and retrieving bookmarks, use search engines effectively for searching the content. 4.2 Web Services: Cloud- software as service (SAS), Google docs, slides, sheets, Form, Web Sites, web pages, e-Mail, Chat, Video Conferencing, e-learning, e-shopping, e-Reservation, e-Groups, Social Networking	CO-4

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

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2418107

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant Cos Number(s)
LSO 1.1. Perform fundamental word processing operations to create a document	1.	a) Create, edit and save document: apply formatting features on the text – line, paragraph b) Use bullets, numbering, page formatting, header, footer, margin, layout	CO-1
LSO 2.1. Work with images/shapes in a document	2.	Insert and edit images and shapes, resizing, cropping, colour, background, group/ungroup	CO-1
LSO 3.1. Organize data in tabular form in a document	3.	Insert table and apply various table formatting features on it.	CO-1
LSO 4.1. Perform Document proofing operations in a document	4.	Review features such as Spelling, grammar, Thesaurus, translate, language, word count, comments	CO-1
LSO 5.1. Organize and print Document	5.	Apply page layout features i. Print layout, web layout, show ruler, gridline, page zoom, split ii. Themes, page background, paragraph, page setup iii. Create multicolumn page iv. Use different options to print the documents	CO-1
LSO 6.1. Create batch of documents with tailored variable information using mail merge	6.	Use mail merge operation with options.	CO-1
Spreadsheets			
LSO 7.1. Create a worksheet LSO 7.2. Format sheet/cell	7.	Create, open and edit worksheet i. Enter data and format it, adjust row height and column width ii. Insert and delete cells, rows and columns. iii. Apply Format cell, wrap text, number format, orientation feature on cell.	CO-2
LSO 8.1. Perform fundamental calculation operations in a worksheet	8.	Insert formulas, absolute and relative cell reference, "IF" conditions, built-in functions and named ranges in worksheet.	CO-2

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant Cos Number(s)
LSO 9.1. Filter the given data set LSO 9.2. Validate data based on criteria LSO 9.3. Sort the data in given order	9.	Apply conditional formatting, data Sorting, Data Filter and Data Validation features.	CO-2
LSO 10.1. Create various types of charts to represent data in graphical form	10.	Create different charts, apply various chart options.	CO-2
LSO 11.1. Print worksheet as per given layout	11.	Apply Page setup and print options on worksheet to print the worksheet.	CO-2
Presentation Tools			
LSO 12.1. Create electronic slide show containing text, image, shape, table, charts objects	12.	Create slide presentation i. Apply design themes to the given presentation ii. Add new slides and insert text, pictures/images, shapes iii. Add tables and charts in the slides	CO-3
LSO 13.1. Run slide presentation in different modes LSO 13.2. Print slide presentation	13.	i. Run slide presentation in customize form/modes ii. Print slide presentation as sheet, handouts using various print options	CO-3
LSO 14.1. Apply given animation effects to the text and slides.	14.	Apply different animation effects to the text and slides with given options.	CO-3
LSO 15.1. Add audio and video files in the presentation	15.	Add some sample audio and video files in the presentation and format the same with various options available.	CO-3
Internet Basics			
LSO 16.1. Configure internet and browser setting	16.	a) Configure Internet connection b) Configure browser settings and use browsers	CO-4
LSO 17.1. Use different internet services	17.	a) Use internet for different web services, such as, chat, email, video conferencing, etc.	CO-4
LSO 18.1. Work with Google Doc	18.	Work with Google Doc for creating collaborative documents on cloud	CO-4
LSO 19.1. Work with google sheet	19.	Work with google sheet for creating collaborative spreadsheets on cloud	CO-4
LSO 20.1. Work with google slides	20.	Work with google slides for creating collaborative slide presentation on cloud	CO-4
LSO 21.1. Create google form	21.	a) Create google form for a sample survey b) Through google forms collect user's response, download it in csv format, analyze it and represent data/trend through graphs and present it.	CO-4, CO3

L) Suggested Term Work and Self Learning: S2418107

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:**
 - I. **Word documents:** prepare documents such as Time Table, Application, Notes, Reports. (Subject teacher shall assign a document to be prepared by each student)
 - II. **Slide Presentations:** Prepare slides with all Presentation features such as: content presentation, presentation about department, presentation of reports. (Subject teacher shall assign a presentation to be prepared by each student).
 - III. **Spreadsheets:** Prepare statements such as Pay bills, tax statement, student's assessment record using spreadsheet- perform statistical analysis, sorting and filtering operations, represent data through various types of charts. (Teacher shall assign a spreadsheet to be prepared by each student).
- c. **Other Activities:** ---

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

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	-	-	15%	-	-	20%	20%
CO-2	-	-	10%	25%	-	10%	20%
CO-3	-	-	15%	25%	33%	15%	20%
CO-4	-	-	30%	25%	33%	15%	20%
CO-5	-	-	30%	25%	34%	40%	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 percentages 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.	a) Create, edit and save document: apply formatting features on the text - line, paragraph b) Use bullets, numbering, page formatting, header, footer, margin, layout	CO-1	60	30	10
2.	Insert and edit images and shapes, resizing, cropping, colour, background, group/ungroup	CO-1	60	30	10
3.	Insert table and apply various table formatting features on it.	CO-1	60	30	10
4.	Review features such as Spelling, grammar, Thesaurus, translate, language, word count, comments	CO-1	70	20	10
5.	Apply page layout features i. Print layout, web layout, show ruler, gridline, page zoom, split ii. Themes, page background, paragraph, page setup iii. Create multicolumn page iv. Use different options to print the documents	CO-1	60	30	10
6.	Use mail merge operation with options.	CO-1	60	30	10
7.	Create, open and edit worksheet i. Enter data and format it, adjust row height and column width ii. Insert and delete cells, rows and columns. iii. Apply Format cell, wrap text, number format, orientation feature on cell.	CO-2	60	30	10
8.	Insert formulas, absolute and relative cell reference, "IF" conditions, built-in functions and named ranges in worksheet.	CO-2	60	30	10
9.	Apply conditional formatting, data Sorting, Data Filter and Data Validation features.	CO-2	60	30	10
10.	Create different charts, apply various chart options.	CO-2	30	60	10
11.	Apply Page setup and print options on worksheet to print the worksheet.	CO-2	30	60	10
12.	Create slide presentation i. Apply design themes to the given presentation ii. Add new slides and insert text, pictures/images, shapes iii. Add tables and charts in the slides	CO-3	40	50	10
13.	i. Run slide presentation in customize form/modes ii. Print slide presentation as sheet, handouts using various print options	CO-3	30	60	10
14.	Apply different animation effects to the text and slides with given options.	CO-3	60	30	10
15.	Add some sample audio and video files in the presentation and format the same with various options available.	CO-3	60	30	10
16.	a) Configure Internet connection b) Configure browser settings and use browsers	CO-4	70	20	10
17.	Use internet for different web services, such as, chat, email, video conferencing, etc.	CO-4	70	20	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
18.	Work with Google Doc for creating collaborative documents on cloud	CO-4	60	30	10
19.	Work with google sheet for creating collaborative spreadsheets on cloud	CO-4	60	30	10
20.	Work with google slides for creating collaborative slide presentation on cloud	CO-4	60	30	10
21.	i. Create google form for a sample survey ii. Through google forms collect user's response, analyze it and represent data/trend through graphs and present it.	CO-4, CO-3	60	30	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, 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.	Computer system with internet connection	(Any computer system with basic configuration)	All
2.	Office application	Such as- Microsoft Office 365/ Microsoft Office 2019 or latest	All

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

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Microsoft Office 2019 For Dummies Paperback – 1 January 2018	Wallace Wang	Wiley (1 January 2018), ISBN-10: 8126578556 ISBN-13: 978-8126578559
2.	Office 2019 In Easy Steps	Michael Price	BPB Publications; First edition (1 January 2019) ISBN-10: 938851114X ISBN-13: 978-9388511148
3.	MS OFFICE 2016 ADVANCED LEVEL Basic Computer Concept In Hindi A Complete Book For MS OFFICE 2016 IN Hindi Language	Rakesh Sangwan	ASCENT PRIME PUBLICATION; 2022nd edition (1 January 2021)

(b) Online Educational Resources:

1. Gain essential skills in Office 2019 and 365: (<https://edu.gcfglobal.org/en/topics/office/>)
2. Microsoft 365 basics video training: (<https://support.microsoft.com/en-us/office/microsoft-365-basics-video-training-396b8d9e-e118-42d0-8a0d-87d1f2f055fb>)

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