

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**V SEMESTER DIPLOMA IN ELECTRONICS ENGINEERING**  
**(Effective from Session 2016-17 Batch)**

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
				Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	
1.	Microprocessor & Applications	1621501	03	03	10	20	70	100	28	40	03
2.	Electronics Measurement – II	1621502	04	03	10	20	70	100	28	40	03
3.	Radio & Telecommunication System	1621503	03	03	10	20	70	100	28	40	03
4.	Power Electronics	1621504	04	03	10	20	70	100	28	40	03
5.	Television Engineering	1621505	03	03	10	20	70	100	28	40	03
		<b>Total:- 17</b>					<b>350</b>	<b>500</b>			

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits	
				Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)		Pass Marks in the Subject
						Internal (A)	External (B)			
6.	Radio & T.V. Engineering Lab.	1621506	06	04	15	35	50	20	03	
7.	Digital Electronics & M.P. Lab.	1621507	06	04	15	35	50	20	03	
		<b>Total:- 12</b>					<b>100</b>			

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
				Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	
8.	Power Electronics (TW)	1621508	04	15	35	50	20	01
9.	In plant training and Visit to Work	1621509	4 weeks continuous	30	70	100	40	02
		<b>Total:- 04</b>				<b>150</b>		
		Total Periods per week Each of duration One Hours = 33				<b>Total Marks = 750</b>		<b>24</b>

## MICROPROCESSOR & APPLICATION

<b>Subject Code 1621501</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rationale :**

**Objective:**

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction 8085.	10
02	Microprocessor Software Concepts.	10
03	Peripheral Interfacing and Timers.	05
04	Assembly Language Programming.	05
05	A/D and D/A converters.	05
06	Introduction to Advanced Microprocessors (Intel 8086 & others)	10
07	Applications.	05
<b>Total :</b>		<b>(50)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>INTRODUCTION 8085:</u></b>		<b>(10)</b>
	01.01	Architecture & Pin Diagram.	
	01.02	Chip Architecture.	
	01.03	Register Structure.	
	01.04	Memory Addressing.	
	01.05	8085 Addressing Modes.	
	01.06	8085 Instruction sets.	
	01.07	8085 Instruction timing and execution.	
	01.08	8085 Interrupt System.	
	01.09	8085 D M A.	
	01.10	8085 S I D & S O D lines.	
<b>Unit-2</b>	<b><u>MICROPROCESSOR SOFTWARE CONCEPTS:</u></b>		<b>(10)</b>
	02.01	Instruction formats.	
	02.02	Addressing Modes.	
	02.03	Instruction Types.	
	02.04	Data Transfer Instructions.	
	02.05	Arithmetic Instructions.	
	02.06	Logical Instructions.	
	02.07	Prog. Control Instructions.	
	02.08	Input / Output Instructions.	
	02.09	Introduction to assembly language programming.	
<b>Unit-3.</b>	<b><u>PERIPHERAL INTERFACING AND TIMERS:</u></b>		<b>(05)</b>
	03.01	Intel 8251, 8255, 8253 and 8259 chips.	
	03.02	555 Timers.	
<b>Unit-4</b>	<b><u>ASSEMBLY LANGUAGE PROGRAMMING:</u></b>		<b>(05)</b>
<b>Unit-5</b>	<b><u>A/D AND D/A CONVERTERS:</u></b>		<b>(05)</b>

	05.01	Successive approx type A/D.		
	05.02	Counter type A/D.		
	05.03	Dual Slope Type A/D.		
	05.04	Sample and Hold Circuits A/D.		
<b>Unit-6</b>	<b><u>INTRODUCTION TO ADVANCED MICROPROCESSORS.</u></b>		<b>(10)</b>	
	06.01	8085, 68000, Z800- Brief discussion of each		
	06.01.01	Architecture of Intel 8086		
	06.01.02	Instruction Set.		
	06.01.03	Addressing Modes.		
	06.01.04	Advanced features.		
	06.01.05	Stacks.		
<b>Unit-7</b>	<b><u>APPLICATIONS.</u></b>		<b>(05)</b>	
	07.01	A few examples.		
<b>Total</b>			<b>50</b>	

**Books Recommended:**

1.	Digital Computer System	-	Malvino
2.	Introduction to Microprocessor	-	Prof. B. Ram
3.	Microprocessor Architecture	-	Gaonkar
4.	Microprocessor and Microcomputer	-	Lui and Gibson
5.	Microprocessor & Applications	-	Vijay Sinha

**ELECTRONICS MEASUREMENT – II**

<b>Subject Code 1621502</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>04</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

Rationale:

Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	High Frequency Measurement.	(12)
02	Electronic Measurement.	(08)
03	Digital Measuring Instrument.	(10)
04	Instruments for Generation and Analysis of waves.	(06)
05	Transducers and Sensors.	(08)
06	Optical Measuring Instruments.	(06)
07	Data Acquisition System (DAS).	(10)

**Total: 60**

<b>Contents (Theory)</b>			<b>Hrs/week</b>	<b>Marks</b>
	<b><u>HIGH FREQUENCY MEASUREMENT:</u></b>		<b>[12]</b>	
<b>Unit-1</b>	01.01	Introduction.		
	01.02	Resonance method.		
	01.03	Measurement of inductance by reactance variation method.		
	01.04	Measurement of capacitance by reactance variation method.		
	01.05	Measurement of effective resistance by variation method.		
	01.06	T Net work.		
	01.07	Parallel T network.		
	01.08	Bridge T network.		
	01.09	Q measurement.		
	01.10	Measurement of frequency.		
	01.11	Radio receiver characteristics measurement.		
	01.11.01	Sensitivity.		
	01.11.02	Selectivity.		
	01.11.03	Fidelity.		
01.11.04	Noise figure.			
<b>Unit-2</b>	<b><u>ELECTRONIC MEASUREMENT:</u></b>		<b>[08]</b>	
	02.01	Electronic voltmeters (average and peak reading) VTVM.		
	02.02	Rectifier-Amplifier and amplifier-rectifier type VTVM.		
	02.03	Transistor voltmeters.		
	02.04	Differential voltmeter.		
	02.05	Small current measurement.		
<b>Unit-3</b>	<b><u>DIGITAL MEASURING INSTRUMENT:</u></b>		<b>[10]</b>	
	03.01	Digital Vs. analog systems.		
	03.02	Diode matrix.		
	03.03	Digital display system.		
	03.04	Digital read out system.		

	03.05	Digital frequency meter.		
	03.06	Period measurement.		
	03.07	Time interval measurement.		
	03.08	Digital voltmeter: Introduction and types.		
	03.08.01	Potentiometer etc. type.		
<b>Unit-4</b>	<b><u>INSTRUMENTS FOR GENERATION AND ANALYSIS OF WAVES:</u></b>		<b>[06]</b>	
	04.01	Basic oscillator circuit.		
	04.02	Pulse and square wave generator.		
	04.03	Signal/function generator.		
	04.04	Signal/function wave analyser.		
	04.05	Harmonic distortion analyser.		
	04.06	Spectrum analyser.		
<b>Unit-5</b>	<b><u>TRANSDUCERS AND SENSORS:</u></b>		<b>[08]</b>	
	05.01	Introduction and classification.		
	05.02	Electrical phenomenon employed in transducer.		
	05.03	Linear variable differential transformer.		
	05.04	Rotary variable reluctance transducer.		
	05.05	Variable reluctance transducer.		
	05.06	Synchros resolvers.		
	05.07	Strain gauges.		
	05.08.01	Wire wound.		
	05.08.02	Pirani gauge.		
	05.08.03	Semi Conductor types.		
	05.09.	Seismic accelerometer.		
	05.10.	Thermistors.		
	05.11	Microphones (different type of introduction only)		
<b>Unit-6</b>	<b><u>OPTICAL MEASURING INSTRUMENTS:</u></b>		<b>[06]</b>	
	06.01	Black body.		
	06.02	Primary and secondary standards.		
	06.03	Measurement of lumen intensity.		
	06.04	Photo emissive cell.		
	06.05	Photo conductive cell.		
	06.06	Photo voltaic cell.		

<b>Unit-7</b>	<b><u>DATA ACQUISITION SYSTEM (DAS):</u></b>		<b>[10]</b>	
	07.01	Classification.		
	07.02	Components of analog DAS.		
	07.03	Components of digital DAS.		
	07.04	Uses of DAS.		
	07.05	Digital to analog converter.		
	07.06	Analog to digital converter.		
	07.07	Multiplexing equipment.		
		<b>Total</b>	<b>60</b>	

**Books Recommended:**

1. Electronic Instrument and Measurement Techniques. - Cooper.
2. A Course in Elect. and Electronics Measurement - Sawhney.
3. Electrical and Electronics Measurement. - Golding.
4. Electronics Measurement-II - B.K. Pathak

## RADIO & TELECOMMUNICATION SYSTEM

<b>Subject Code</b> <b>1621503</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits</b>  3
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rationale:**

**Objective:**

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Elements of Communications.	(08)
02	Radio Receiver.	(06)
03	Propagation of Waves.	(08)
04	Antenna.	(06)
05	Radar and Navigation Aids.	(10)
06	Satellite Communication.	(06)
07	Analog Transmission.	(06)
08	Digital Transmission.	(04)
09	Switching.	(06)
<b>Total:</b>		<b>(60)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>ELEMENTS OF COMMUNICATIONS:</u></b>		<b>[08]</b>
	01.01	Principle of heterodyning.	
	01.02	Mixers.	
	01.03	Converters.	
	01.04	Radio Transmitters.	
	01.04.01	Block Diagram.	
	01.04.02	Operation and performance of AM and FM Transmitters.	
<b>Unit-2</b>	<b><u>RADIO RECEIVER:</u></b>		<b>[06]</b>
	02.01	Block diagram of AM and FM Radio Receivers.	
	02.02	Principle of Operation.	
	02.03	Different stages i.e. R. F. Section, I F Stage, Local Oscillator, mixer, tuning, band selection and switch, Volume Control.	
<b>Unit-3</b>	<b><u>PROPAGATION OF WAVES:</u></b>		<b>[08]</b>
	03.01	Introduction to various modes of propagation.	
	03.02	Ground wave propagation.	
	03.03	Space wave propagation.	
	03.04	Tropospheric wave propagation.	
	03.05	Refraction by tropospheric wave.	
	03.06	Tilt of surface wave.	
	03.07	Sky wave propagation.	
	03.08	Ionospheric propagation.	
	03.08.01	Introduction.	
	03.08.02	Critical frequency.	
	03.08.03	Maximum usable frequency.	
	03.08.04	Characteristics of ionosphere.	

	03.08.05	Virtual height.		
	03.08.06	SKIP distance.		
	03.08.07	Tropospheric scattering system.		
<b>Unit-4</b>	<b><u>ANTENNA:</u></b>		<b>[06]</b>	
	04.01	Introduction.		
	04.02	Radiation intensity.		
	04.03	Directivity.		
	04.04	Gain.		
	04.05	Field Pattern.		
	04.06	Phase Pattern.		
	04.07	General equation for field of a point source.		
	04.08	Introduction to working principle of- Helical, Biconical, Horn, lense, Long wire, Yagi type of Antennas.		
<b>Unit-5</b>	<b><u>RADAR AND NAVIGATION AIDS:</u></b>		<b>[10]</b>	
	05.01	Elements of RADAR System.		
	05.02	Radar Equation.		
	05.03	Radar transmitting system.		
	05.04	Radar antenna and scanning.		
	05.05	Duplexer.		
	05.06	Radar Receiver.		
	05.07	Moving Target Indicator.		
	05.08	Radar range and beckons.		
<b>Unit-6</b>	<b><u>SATELLITE COMMUNICATION:</u></b>		<b>[05]</b>	
	06.01	Introduction.		
	06.02	Need.		
	06.03	Low orbiting satellites.		
	06.04	Geo stationary satellite.		
	06.05	Choice of frequency bands.		
	06.06	Satellite broadcasting.		
	06.07	Remote sensing : basic principle.		
<b>Unit-7</b>	<b><u>ANALOG TRANSMISSION:</u></b>		<b>[04]</b>	
	07.01	DC signalling, AC signalling and Band Width, Transmission media, attenuators and repeaters, Modems.		
<b>Unit-8</b>	<b><u>DIGITAL TRANSMISSION:</u></b>		<b>[04]</b>	
	08.01	Digital Channels and PCM, Optical Fibre Transmission Systems, Integrated Services Digital Network (ISDN), ISDN Services & Applications, Broad Band Networks.		



Unit-9	<b>SWITCHING:</b>		[06]	
	09.01	Telephone Switching-Strogger : Switching Systems, Crossbar Switching, Electronic space, Division switching, Speech digitization and transmission, Time Division Switching, Optical Fibre Systems, Traffic Engg., Telephone Networks, Data Networks.		
Total-			60	

**Books Recommended:**

1. Electronic Communication System - Kennedy.
2. Radio Engineering - Chatterjee.
3. Telecommunications and the Computers, PHI. - James Martin.
4. Telecommunication Switching Systems & Networks, PHI. - T. Vishwanathan.
5. Radio & Telecommunication System - D.S. Prasad

## POWER ELECTRONICS

<b>Subject Code</b> <b>1621504</b>	<b>Theory</b>			<b>No of Period in one session :50</b>			<b>Credits</b>  <b>3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>04</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rationale:**

**Objective:**

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Regulated Power Supply.	(05)
02	Large Signal Amplifier.	(08)
03	Thyristors.	(06)
04	Power Switching Devices and Triggering Circuits.	(06)
05	A C Power Control and Motor Speed Control.	(05)
06	Line Commutated Converters.	(04)
07	Inverters.	(06)
08	Choppers.	(06)
09	Speed Control of D. C. Motor.	(01)
10	Speed Control of A. C. Motor.	(03)
<b>Total:</b>		<b>(50)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>REGULATED POWER SUPPLY:</u></b>		<b>[05]</b>
	01.01	Series Regulators.	
	01.02	Shunt Regulators.	
	01.03	Over load and over voltage protection.	
	01.04	Switching mode regulators.	
<b>Unit-2</b>	<b><u>LARGE SIGNAL AMPLIFIER:</u></b>		<b>[08]</b>
	02.01	Introduction.	
	02.02	Classification.	
	02.03	Class A, B, AB and C amplifier.	
	02.04	Harmonic Distortion.	
	02.05	Transformer Coupled Amplifier.	
	02.06	Push Pull Amplifier. (Class-B)	
	02.07	Cross over distortion and its elimination.	
<b>Unit-3</b>	<b><u>THYRISTORS:</u></b>		<b>[06]</b>
	03.01	Thyristor family, symbol and working.	
	03.02	Silicon controlled rectifier operation.	
	03.03	SCR characteristics.	
	03.04	Two transistor analogy.	
	03.05	Methods of turning on.	
	03.06	Turn off mechanism.	
	03.07	Device ratings.	
	03.08	Series and Parallel operation of SCR.	
<b>Unit-4</b>	<b><u>POWER SWITCHING DEVICES AND TRIGGERING CIRCUITS:</u></b>		<b>[06]</b>
	04.01	Diac.	

	04.02	Triac.		
	04.03	U J T.		
	04.04	Relaxation Oscillator.		
	04.05	Use of Diac and Triac.		
	04.06	Resistance turn on circuit.		
	04.07	R C turn on circuit.		
<b>Unit-5</b>	<b><u>A C POWER CONTROL AND MOTOR SPEED CONTROL:</u></b>		<b>[05]</b>	
	05.01	Phase control.		
	05.02	Full wave control circuit.		
	05.03	Half controlled bridge circuit.		
	05.04	Dual Converters.		
<b>Unit-6</b>	<b><u>LINE COMMUTED CONVERTERS:</u></b>		<b>[04]</b>	
	06.01	Line commuted circuit.		
	06.02	Effect of source impedance.		
	06.03	Inverter operation.		
<b>Unit-7</b>	<b><u>INVERTERS:</u></b>		<b>[06]</b>	
	07.01	Forced commutation inverters.		
	07.02	Classification of forced commutation.		
	07.03	Parallel inverter.		
	07.04	Self commutated inverter.		
	07.05	Bridge inverter single and three phase.		
<b>Unit-8</b>	<b><u>CHOPPERS:</u></b>		<b>[06]</b>	
	08.01	On off control.		
	08.02	Rotor on off control chopper circuit.		
	08.03	Improved on off circuits.		
	08.04	Step up chopper circuit.		
	08.05	Multi phase circuit.		
	08.06	Two quadrant Choppers.		
	08.07	A C Choppers.		
<b>Unit-9</b>	<b><u>SPEED CONTROL OF D. C. MOTOR.</u></b>		<b>[01]</b>	
<b>Unit-10</b>	<b><u>SPEED CONTROL OF A. C. MOTOR.</u></b>		<b>[03]</b>	
<b>Total-</b>			<b>50</b>	

**Books Recommended:**

- |                                    |                         |
|------------------------------------|-------------------------|
| 1. SCR                             | - Gentry and Others.    |
| 2. Thyristor and Their Application | - Ramamoorthy.          |
| 3. SCR                             | - P. C. Sen.            |
| 4. SCR Manual                      | - Gen. Electric Co.     |
| 5. SCR                             | - Sugandhi and Sugandhi |
| 6. Power Electronics               | - Pradeep Sarkar        |

## TELEVISION ENGINEERING

<b>Subject Code</b> <b>1621505</b>	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks			
	L	T	P/S	ESE	:	100	
	03	—	—	TA	:	70	
			CT	:	10	3	

**Rationale:**

**Objective:**

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Introduction.	(04)
02	Monochrome Picture Tube.	(08)
03	Basic T V Broadcasting.	(08)
04	T. V. Receiver.	(06)
05	Colour Television.	(08)
06	Remote Control.	(04)
07	Special Circuits	(06)
08	Receiver Servicing.	(06)
<b>Total:</b>		<b>(50)</b>

Contents (Theory)		Hrs/week	Marks
<b>Unit-1</b>	<b><u>INTRODUCTION:</u></b>		<b>[04]</b>
	01.01	Elements of T. V. System.	
	01.02	Analysis and synthesis of T. V. Picture.	
	01.03	Composite video signal.	
<b>Unit-2</b>	<b><u>MONOCHROME PICTURE TUBE:</u></b>		<b>[08]</b>
	02.01	Camera tubes.	
	02.02.01	Image orthicon.	
	02.02.02	Vidicon.	
	02.02.03	Plumbicon.	
	02.02.04	Comparison between one another.	
<b>Unit-3</b>	<b><u>BASIC T V BROADCASTING:</u></b>		<b>[08]</b>
	03.01	Block diagram of T. V. Transmission.	
	03.02	Principle of operation.	
	03.03	T. V. Signal propagation.	
	03.04	Antennas used for transmission.	
	03.05	Antenna used for reception.	

<b>Unit-4</b>	<b><u>T. V. RECEIVER:</u></b>		<b>[06]</b>	
	04.01	Classification.		
	04.02	Block diagram.		
	04.03	Different sections.		
	04.04	Tuners.		
<b>Unit-5</b>	<b><u>COLOUR TELEVISION:</u></b>		<b>[08]</b>	
	05.01	Compatibility.		
	05.02	Three colour theory.		
	05.03	Colour Camera.		
	05.04	Colour receiver tubes.		
	05.05	Colour T. V. Transmitter and receiver block diagram.		
	05.06	Colour signal transmission and reception.		
	05.07	PAL system details.		
<b>Unit-6</b>	<b><u>REMOTE CONTROL:</u></b>		<b>[04]</b>	
	06.01	Introduction.		
	06.02	Special Circuits.		
	06.03	Booster amplifier.		
	06.04	Automatic brightness Control.		
<b>Unit-7</b>	<b><u>SPECIAL CIRCUITS:</u></b>		<b>[06]</b>	
	08.01	Closed circuit T V.		
	08.02	Cable T. V.		
	08.03	V C P and V C R Monitors.		
<b>Unit-8</b>	<b><u>RECEIVER SERVICING:</u></b>		<b>[06]</b>	
	10.01	Troubleshooting procedures for monochrome T. V.		
	10.02	Troubleshooting procedures for colour T. V.		
	10.03	Safety precautions.		
<b>Total-</b>			<b>50</b>	

**Books Recommended:**

- |                           |                 |
|---------------------------|-----------------|
| 1. Television.            | - R. C. Gulati. |
| 2. Monochrome Television. | - Grob.         |
| 3. Colour Television.     | - Grob.         |
| 4. Television.            | - Dhakne.       |
| 5. Television Engineering | - S.N. Khanna   |

## RADIO & TELEVISION ENGINEERING LAB.

<b>Subject Code</b> <b>1621506</b>	<b>Practical</b>			<b>No of Period in one session :</b>			<b>Credits</b>  <b>3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>	
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
			<b>External</b>	<b>:</b>	<b>35</b>		

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Study of operation of CTV.		
<b>Unit-2</b>	Video tape recorder circuit operation.		
<b>Unit-3</b>	Study of pattern generator.		
<b>Unit-4</b>	Familiarization with Black and White T. V. Receiver.		
<b>Unit-5</b>	Familiarization with Colour T. V. Receiver.		
<b>Unit-6</b>	Study and serving of CRT, deflection and high voltage section.		
<b>Unit-7</b>	Alignment of I F and frequency response curve.		
<b>Unit-8</b>	Study and serving of sound section.		
<b>Unit-9</b>	Study and serving of VHF & UHF tuner circuit.		
<b>Unit-10</b>	Study of Chrome section and colour sync. Circuit.		
<b>Unit-11</b>	Study of typical yagi antenna.		
<b>Unit-12</b>	Study of Remote control circuit.		
<b>Unit-13</b>	Study of VCR circuit.		
<b>Unit-14</b>	Study of video recording room.		

## DIGITAL ELECTRONICS & MICROPROCESSOR LAB.

<b>Subject Code 1621507</b>	<b>Practical</b>			<b>No of Period in one session :</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Operation of Mono stable multivibrator circuit.		
<b>Unit-2</b>	Operation of Bi stable multivibrator circuit.		
<b>Unit-3</b>	Operation of Astable multivibrator circuit.		
<b>Unit-4</b>	Operation of Schmitt trigger circuit.		
<b>Unit-5</b>	Operation of Comparator circuit.		
<b>Unit-6</b>	Operation of Integrator circuit.		
<b>Unit-7</b>	Operation of Blocking Oscillator circuit.		
<b>Unit-8</b>	Operation of Shift registers and counters.		
<b>Unit-9</b>	Operation of EPROM eraser.		
<b>Unit-10</b>	Operation of Multiplexers ICs.		
<b>Unit-11</b>	Operation of D/A converter.		
<b>Unit-12</b>	Operation of A/D converter.		
<b>Unit-13</b>	Operation of R-2R ladder network.		
<b>Unit-14</b>	Operation of Sample and Hold circuit.		
<b>Unit-15</b>	Operation of Delta modulation circuit.		
<b>Unit-16</b>	Operation of seven segments display circuit.		

## POWER ELECTRONICS LAB

<b>Subject Code 1621508</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits  01</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>50</b>	
	—	—	<b>04</b>	<b>External Examiner</b>	<b>:</b>	<b>35</b>	

<b>Contents (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Series regulated power supply.		
<b>Unit-2</b>	Shunt regulated power supply.		
<b>Unit-3</b>	Characteristics of S C R.		
<b>Unit-4</b>	Operation of controlled rectifier.		
<b>Unit-5</b>	Study of parallel inverter circuit.		
<b>Unit-6</b>	Study of series inverter circuit.		
<b>Unit-7</b>	Operation of various speed control methods of induction motor.		
<b>Unit-8</b>	Speed control of D C motor.		
<b>Unit-9</b>	Speed control of synchronous motor.		
<b>Unit-10</b>	Operation of magnetic amplifier.		
<b>Unit-11</b>	Input / Output characteristics of OP AMP.		
<b>Unit-12</b>	Amplifier circuit operation using 723 and 309 IC.		



## INPLANT TRAINING AND VISIT TO WORKS

<b>Subject Code 1621509</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits 2</b>		
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>				<b>:</b>	<b>100</b>
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>				<b>:</b>	<b>30</b>
	—	—	<b>4 Weeks Continues</b>	<b>External Examiner</b>				<b>:</b>	<b>70</b>

### Rationale :

A student is required to develop his knowledge skill and attitudes gained while joining through different course. It is desirable to expose the students to the world of work to be familiar with the real life situations and understand the problem there in. The “In plant training and visit to work “being introduced for the final year part time diploma technicians for Electronics Engineering with the above objective in view. This course will help the students to observe how the technical, managerial, quality control safety and other principle, are being applied in real life situation. They will be able to observe the technique of decision making on the shop floor. He will also, be able to observe the technique of decision making on the shop floor. He will, also be able to observe how his sub-ordinate perform in their day to day work and co-ordinate shop floor activities. The course will also, help bring attitudinal changes in a student.

### Objective:

A student will be able to:

- Understand the working of the machines, tools and equipments more clearly.
- Write down the specifications of the machines, tools, equipments.
- Know the process of material storing / material management.
- Learn to maintain office records / filing.
- Know the process of planning, implementation and monitoring.
- Learn the skill shop floor co-ordination.
- Know the skill of office management and inventory Control.
- Understand the process of production.
- Know the skill of quality control.
- Know the organizational set-up and plant Lay-out.
- Find out Characteristics, Functions, and activities of those industries.
- Find out opportunities and method of recruitments.
- Know the source of raw materials and markets for industries.
- Find out the special characteristics of the industries.
- Observe and understand special machines, which they may not have been in their institutes.
- Observe the energy consumption in on industry method to same energy.
- Try to learn techniques to save energy.
- Observe the environment Pollutants and learn how to minimize environmental Pollutio

Student should preferably visit and undergo training in the following industries:-

	<b>Contents (Term Work)</b>	<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Microwave Tower Stations.		
<b>Unit-2</b>	Radio Stations.		
<b>Unit-3</b>	T. V. Stations.		
<b>Unit-4</b>	Telephone Exchange.		
<b>Unit-5</b>	Railway Signaling System Station.		
<b>Unit-6</b>	Wireless Transmission & Distribution System.		
<b>Unit-7</b>	Any other Industry which may be useful to the electronics Engineering technicians and are comfortably situated.		

**REPORT WRITING:**

A report on “In Plant Training” should include

Introduction.

Plant Lay-out and organization.

Planning for Product/Maintenance/Repair.

Shop floor training.

Testing and quality control facility.

Special observations which are special characteristics of the plant viz. material storing etc.

Conclusion-

- Observations
- Typical Characteristics
- Area of Weakness
- Suggestions

**SCHEDULE FOR TRAINING:**

- |   |                                |   |           |
|---|--------------------------------|---|-----------|
| • | Planning/Office Management     | - | One Week  |
| • | Shop floor                     | - | Two Weeks |
| • | Testing/Quality Control/Stores | - | One Week  |

**The report on visit to works should be presented and assessed in the form of Seminar.**

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**V SEMESTER DIPLOMA IN COMPUTER SCIENCE & ENGINEERING**

(Effective from Session 2016-17 Batch)

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	System Maintenance	1618501	03	03	10	20	70	100	28	40	03
2.	Data Communication & Networking	1618502	03	03	10	20	70	100	28	40	03
3.	Internet & Web Technology	1618503	03	03	10	20	70	100	28	40	03
4.	Software Engineering	1618504	03	03	10	20	70	100	28	40	03
5.	JAVA	1618505	03	03	10	20	70	100	28	40	03
		<b>Total:- 15</b>					<b>350</b>	<b>500</b>			

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Data Communication & Network Lab	1618506	06	03	15	35	50	20	02
7.	Internet & Web Technology Lab	1618507	06	03	15	35	50	20	02
8.	System Maintenance Lab	1618508	06	03	15	35	50	20	02
		<b>Total:- 18</b>					<b>150</b>		

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject	
9.	In Plant Training & Visit to Work (T W)	1618509	4 weeks continuous	30	70	100	40	03
		<b>Total:-</b>				<b>100</b>		
		Total Periods per week Each of duration One Hours = 33				<b>Total Marks = 750</b>		<b>24</b>

## SYSTEM MAINTENANCE

<b>Subject Code 1618501</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

### Rationale & Objective:

Today, the computer has become a household thing. In order to understand the proper functioning of Computer System one need to get exposed to various hardware components in the computer system. This subject will expose the diploma students to understand the various hardware components and will teach them to troubleshoot the problems in these components.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Hardware Organization of PC	(12)
02	Bus Standard and Architecture	(08)
03	HDD	(08)
04	Monitors	(10)
05	Printers	(10)
06	PC Installation	(12)
<b>Total:-</b>		<b>(60)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>HARDWARE ORGANIZATION OF PC</u></b> 01.01 The Motherboard of PC 01.02 Memory Organization : BIOS, ROM, RAM etc.	<b>[12]</b>	
<b>Unit -2</b>	<b><u>BUS STANDARD AND ARCHITECTURE</u></b> 02.01 PC Bus-16 bit, 32 bit. 02.02 Slots-ISA, EIAS, PCI. 02.03 Ports-USB, Serial, Com	<b>[08]</b>	
<b>Unit -3</b>	<b><u>HDD</u></b> 03.01 Understanding types (IDE, SCSI, ESDI) 03.02 Connecting HDD.	<b>[08]</b>	
<b>Unit -4</b>	<b><u>MONITORS</u></b> 04.01 Type of monitors CCA, HGA, SVGA, PGA and their functions. 04.02 Troubleshooting.	<b>[10]</b>	
<b>Unit -5</b>	<b><u>PRINTERS</u></b> 05.01 Types of printers: Dot matrix, inkjet, Laserjet and their working.	<b>[10]</b>	
<b>Unit--6</b>	<b><u>PC INSTALLATION</u></b> 06.01 Installation of motherboard, peripheral devices and Operating System. 06.02 Troubleshooting : Diagnostic Software	<b>[12]</b>	
<b>Total-</b>		<b>60</b>	

### Books Recommended:

1	IBM PC Technical Manual	-	
2	Computer maintenance and repair	-	Schott Muller
3	Computer Architecture	-	Raffiquzzaman
4	Hardware and Software of PC, Willey Eastern Ltd., New Delhi.	-	S. K. Bose
5	Computer Installation and Trouble shooting, I.S.T.E.	-	M. Radhakrishnan and D. Balasubramaniam
6	System Maintenance	-	Dhiraj Sharma

## DATA COMMUNICATION & NETWORK

<b>Subject Code 1618502</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:**

This course will allow students to develop background knowledge as well as core expertise in data communications and networking, which is one of the fastest growing technologies in our culture today. It forms an integral part of the modern Information Technology. Starting from Intranet in small offices to the global Internet, principles of data communication and networking play an important role.

**Objective:**

At the end of the course, the students will be able to know:

- Evolution of data communication and networking up to the internet
- Principles of data communication, channel characteristics, signalling, modulation and encoding
- Various transmission media, their comparative study, fibre optics and wireless communication in details
- Categories and topologies of networks
- OSI model vis-à-vis TCP/IP architecture
- Multiplexing, channel error detection and correction, data link protocols
- Ethernet and token ring, X.25 ATM, BISDN
- Details of IP operations in the INTERNET and associated routing principles
- Operation of optical networks, satellite networks and wireless mobile systems
- Strategies for securing network application using cryptography
- Emerging technologies such as SONET, FDDI, mobile telephony etc.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Fundamentals of Data Communications	(03)
02	Transmission Media	(05)
03	Data Modems	(04)
04	Multichannel Data Communication	(04)
05	Networking Fundamentals	(04)
06	OSI Model and TCP/IP Suite	(08)
07	Data Link Protocol	(04)
08	Local Area Network (LAN)	(04)
09	Wide Area Network (WAN)	(05)
10	Data Transmission Network	(04)
11	Wireless Communication	(03)
12	Security and Privacy	(02)
	<b>Total</b>	<b>(50)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>FUNDAMENTALS OF DATA COMMUNICATIONS</u></b> Introduction, Communication Systems, Signal and data, Channel Characteristics, Transmission modes, Synchronous and asynchronous transmission.	<b>[03]</b>	
<b>Unit -2</b>	<b><u>TRANSMISSION MEDIA</u></b> Guided Media: <ul style="list-style-type: none"> <li>- Twisted pair</li> <li>- Co-axial cable</li> <li>- Optical fibre</li> </ul> Unguided Media <ul style="list-style-type: none"> <li>- Radio, VHF, Microwave, Satellite</li> </ul> Infrared Transmission	<b>[05]</b>	
<b>Unit -3</b>	<b><u>DATA MODEMS</u></b> Concept of Modulation, Pulse Code Modulation (PCM), Shift Keying (ASK, FSK, PSK)	<b>[04]</b>	
<b>Unit -4</b>	<b><u>MULTICHANNEL DATA COMMUNICATION</u></b> Circuits, channels and multi channeling, Multiplexing (FDM, TDM, WDM).	<b>[04]</b>	
<b>Unit -5</b>	<b><u>NETWORKING FUNDAMENTALS</u></b> An overview of networking Switching techniques: <ul style="list-style-type: none"> <li>- Circuit Switching</li> <li>- Packet Switching</li> <li>- Message Switching</li> </ul> Network Topologies: <ul style="list-style-type: none"> <li>- Bus Topologies</li> </ul> Ring Topologies: Star Topologies:	<b>[04]</b>	
<b>Unit--6</b>	<b><u>OSI MODEL AND TCP/IP SUITE</u></b> Network architectures, Layering the communication process, The need for layered solutions, Open Systems Interconnection (OSI) model, TCP/IP Model, Introduction to Protocol TCP/IP, UDP, FTP.	<b>[08]</b>	
<b>Unit--7</b>	<b><u>DATA LINK PROTOCOL</u></b> Protocol, Transmission Control Procedure: <ul style="list-style-type: none"> <li>- Synchronous Protocols</li> <li>- Asynchronous Data Link Control (DLC) Protocols</li> </ul> Character Oriented Protocols (COP): Bit Oriented Protocols (BOP): Synchronous Data Link Control Protocol (SDLC) High Level Data Control Protocol (HDLC)	<b>[04]</b>	
<b>Unit--8</b>	<b><u>LOCAL AREA NETWORK (LAN)</u></b> Baseband versus Broadband, Media Access Control, LAN hardware, LAN operating systems Extending LAN: Fibre Optic Extension, Repeaters, Bridges, Router, Gateways, Switches Hubs, Virtual LANs	<b>[04]</b>	
<b>Unit--9</b>	<b><u>WIDE AREA NETWORK (WAN)</u></b> Router Concepts: <ul style="list-style-type: none"> <li>- Forwarding Function</li> <li>- Filtering Function</li> </ul> Routing Method - Static and Dynamic routing	<b>[05]</b>	

<b>Unit--10</b>	<b><u>LOCAL AREA NETWORK (LAN)</u></b> Telephone Networks: - Dial up Telephone Networks - Leased Line - X.25 The Integrated Services Digital Network (ISDN): - Narrow band ISDN - Broadband ISDN Service Frame Relay, Cell Relay	<b>[04]</b>	
<b>Unit--11</b>	<b><u>WIRELESS COMMUNICATION</u></b> Cellular Radio, Telephony (GSM), VSAT	<b>[03]</b>	
<b>Unit--12</b>	<b><u>SECURITY AND PRIVACY</u></b> Network Security, Firewall, VPN	<b>[02]</b>	
<b>Total</b>		<b>50</b>	

**Books Recommended:**

**Text Books**

1. Data Communication and Networking, First Edition, 1999 - B. Forouzan Tata McGraw Hill
2. Data and Communication, Sixth Edition, 2002 - W. Stallings Prentice Hall of India
3. Wireless and Mobile Network Architecture, 2001 - Lin and Chlatmtac John Wile and Sons, India

**Reference Books**

1. Computer Networks, Fourth Edition, 2002 - A.S. Tanenbaum Pearson Education
2. Communication Networks, First Edition, 2000 - A. Leon-Gracia and I Widjaja Tata McGraw Hill
3. An Engineering Approach to Computer Networking, 1999 - S. Keshav Addison Wesley
4. Understanding Data Communication and Networks, Second Edition, 1999 - William A. Shay Brook Cole Publishing Company
5. Local Area Networks, 1997 - C.E. Keiser Tata McGraw Hill
6. Data Communication & Networking - S.N. Arora

## INTERNET AND WEB TECHNOLOGY

<b>Subject Code 1618503</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

### Rationale & Objective:

Internet is the easiest and fastest way of communication. The use of Internet can be easily seen in our day to day life, be it sending a mail or looking for some information, its importance can't be overruled. This subject exposes the diploma students to basic networking technology and the Internet technology. IT will teach the students, the Internet technology and different features available on the Internet.

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Review of Network concepts.	(08)
02	IP Addressing	(09)
03	IP Datagram	(09)
04	TCP	(09)
05	Domain Name System	(07)
06	E-mail and File transfer	(10)
07	World Wide Web (WWW)	(08)
<b>Total:-</b>		<b>(60)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>REVIEW OF NETWORK CONCEPTS</u></b> 01.01 Introduction to Networking 01.02 Network Topology, Interconnecting devices: (Repeaters, Bridges, Switches, Router, Gateway, Hub) 01.03 Introduction to Wi-Fi and Bluetooth 01.04 OSI Stack and TCP/IP model.	[08]	
<b>Unit -2</b>	<b><u>IP ADDRESSING</u></b> 02.01 Scheme. 02.02 Hierarchy Classes. 02.03 Division of Address space. 02.04 Special Address.	[09]	
<b>Unit -3</b>	<b><u>IP DATAGRAM</u></b> 03.01 Header. 03.02 Virtual Packet. 03.03 Routing Tables. 03.04 Error detection and correction. 03.05 Ethernet , Fast Ethernet and Gigabit Ethernet, Comparison between IPV4 and IPV6	[09]	
<b>Unit -4</b>	<b><u>TCP</u></b> 04.01 Segment Format of TCP 04.02 Three way handshake 04.03 Congestion control.	[09]	
<b>Unit -5</b>	<b><u>DOMAIN NAME SYSTEM</u></b> 05.01 Structure 05.02 DNS client, server model 05.03 Hierarchy Multiple Server 05.04 Resolving a Name.	[07]	



<b>Unit--6</b>	<b><u>E-MAIL AND FILE TRANSFER</u></b> 06.01 SMTP 06.02 Mail Transfer 06.03 Dial up and POP 06.04 FTP general model and user interface. 06.05 File name translation and Network file system.	[10]	
<b>Unit--7</b>	<b><u>WORLD WIDE WEB (WWW):</u></b> 07.01 Interface. 07.02 Hypertext 07.03 Hypermedia. 07.04 HTML format and representation. 07.05 Embedding graphics and images. 07.06 HTTP.	[08]	
<b>Total</b>		<b>60</b>	

**Books Recommended:**

- |  |                               |
|--|-------------------------------|
| 1. Network Theory  | - A. Tanaunbomb               |
| 2. HTML-4 for world wide web, Wesley (Singapore) Pvt., New Delhi.                                | - Castro Addison              |
| 3. Using the world wide web, Prentice Hall of India Pvt., New Delhi                              | - Wall                        |
| 4. Internet for everyone, Vikas Publishing House Pvt. Ltd., New Delhi.                           | - Alexis Leon and Mathew Leon |
| 5. HTML 4.0 Unlashed, Tech Media Publication   | - Rick Dranell                |
| 6. Teach yourself HTML 4.0 with XML, DHTML and Java Script, IDG Books India Pvt. Ltd., New Delhi | - Stephanie, Cottrell, Bryant |
| 7. Internet & Web Technology   | - Vivek Ranjan                |

## SOFTWARE ENGINEERING

<b>Subject Code 1618504</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

### Rationale & Objective:

<u>S.No.</u>	<u>Topics</u>	<u>Periods</u>
01	Software Engineering Concepts	(04)
02	Software Life Cycle Models	(08)
03	Software Requirements Analysis and Design	(10)
04	Programming Tools and Standards	(08)
05	Testing and Maintenance	(10)
06	Software Project Management	(10)
		<b>(50)</b>

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	<b><u>SOFTWARE ENGINEERING CONCEPTS</u></b> 01.01 Categories and characteristics of software systems 01.02 Attributes of a good software product 01.03 Software Engineering (SE) principles and their role in software system design	[04]	
<b>Unit -2</b>	<b><u>SOFTWARE LIFE CYCLE MODELS</u></b> 02.01 Classical life cycle, iterative waterfall model, spiral model, comparison of different models	[08]	
<b>Unit -3</b>	<b><u>SOFTWARE REQUIREMENTS ANALYSIS AND DESIGN</u></b> 03.01 Need and preparation of Software requirements. 03.02 Design concepts and notations; high level and low level design; modularization techniques; structured and object-oriented design; attributes of good requirement specifications and design.	[10]	
<b>Unit -4</b>	<b><u>PROGRAMMING TOOLS AND STANDARDS</u></b> 04.01 Procedural and nonprocedural languages.. 04.02 Coding standards and guidelines.	[08]	
<b>Unit -5</b>	<b><u>TESTING AND MAINTENANCE</u></b> 05.01 Introduction to verification and validation methods. 05.02 Debugging and testing strategies. 05.03 Black box and white box testing of software systems 05.04 Software maintenance, configuration management.	[10]	
<b>Unit--6</b>	<b><u>Software Project Management</u></b> 06.01 Project size and its categories 06.02 Planning and estimations 06.03 Gantt and PERT charts; software measures: LOC, function point and COCOMO models	[10]	
<b>Total</b>		<b>50</b>	

### Books Recommended:

1.	Software Engineering	-	R.S. Pressman McGraw Hill International Edition
2.	Software Engineering, 1996	-	Ghezzi C.et al Prentice Hall of India
3.	Software Engineering	-	Pankaj Jalote, Narosa Publication
4	Software Engineering	-	Pankaj Mohan

# JAVA

<b>Subject Code 1618505</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

**Rationale:**

This course is designed to impart knowledge and skills required to solve the real world problems using object-oriented approach utilizing Java language constructs. This course covers the subject in two parts, viz, Java Language and Java Library.

**Objective:**

After completion of the course students is expected to understand the following:

- Java tokens for creating expressions and creating datatypes.
- The way various expression and data types are assembled in packages.
- Implementation of Inheritance, Exception handling and Multithreading in Java.
- Java I/O basics and Applets.
- Setting up GUI using AWT/ Swing.
- Network Programming in Java.
- Accessing relational databases from Java Programmes.

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>UNIT-1</b>	<b><u>THE JAVA LANGUAGE:</u></b>	<b>[50]</b>	
	01.01 Introduction to Java	[02]	
	01.01.01 An overview of JAVA, JAVA Applets and Applications.		
	01.01.02 Difference between Java Script and JAVA.		
	01.01.03 Object Oriented programming features.		
	01.02 Data types, Variable & Arrays	[04]	
	01.02.01 Java Token & Keywords		
	01.02.02 Integers types, Floating point types		
	01.02.03 The JAVA class libraries		
	01.02.04 Declaring a variable, Dynamic initialization		
	01.02.05 The scope and lifetime of variable		
	01.02.06 Type conversion and casting		
	01.02.07 Arrays: - One-dimensional arrays - Multi-dimensional arrays	[06]	
	01.02.08 Alternative array declaration syntax		
	01.03 Operators	[04]	
	01.03.01 Arithmetic operations		
	01.03.02 The Bitwise operators		
	01.03.03 Relational operators		
	01.03.04 Boolean logical operators		
	01.03.05 The assignment operator		
	01.03.06 The Operator		
	01.03.07 Operator precedence		

	01.04	Control Statements	[06]	
	01.04.01	Selection statements		
	01.04.02	Iteration statements		
	01.05	Introduction Classes and objects	[08]	
	01.05.01	Class fundamentals		
	01.05.02	Declaring objects, Assigning object reference variables		
	01.05.03	Introducing methods		
	01.05.04	Constructors		
	01.05.05	Garbage Collection		
	01.05.06	A stack class, overloading constructors		
	01.05.07	Using objects as parameters, argument passing		
	01.05.08	Returning objects, Recursion		
	01.06	Inheritance	[06]	
	01.06.01	Inheritance basics, member access and inheritance		
	01.06.02	Using class, creating a multilevel hierarchy		
	01.06.03	Method overriding, dynamic method dispatch		
	01.06.04	Using abstract classes, using final with inheritance, the object class		
	01.07	Packages and Interfaces	[04]	
	01.07.01	Packages: Defining a package, understanding class path, importing packages.		
	01.07.02	Interfaces: Defining an interface,		
	01.08	Exception handling	[04]	
	01.08.01	Exception handling fundamentals		
	01.08.02	Exception types, uncaught exceptions, using try and catch		
	01.09	Multithreaded Programming	[02]	
	01.09.01	The JAVA thread model, The main thread, creating a thread		
	01.09.02	Alive ( ) and Joint ( ), Suspend ( ) and Resume ( ), Thread priorities.		
	01.10	I/O, Applets and Other Topics	[04]	
	01.10.01	I/O Basics: Streams, The stream classes, The predefined streams, Reading console input, Writing console output, Reading and Writing files.		
	01.10.02	Applet fundamentals		
<b>UNIT-2</b>	<b><u>THE JAVA LIBRARY:</u></b>		<b>[10]</b>	
	02.01	String Handling	[02]	
	02.01.01	The string constructor, Special string operations		
	02.02	Exploring JAVA Lang	[02]	
	02.02.01	Simple type wrappers, Runtime memory management		

	02.02.02	Array Copy, Object, Clone ( ) and the cloneable interface.		
	02.02.03	Class & class loader		
	02.03	The Utility Classes	[02]	
	02.03.01	The enumeration interface, Vector & Stack		
	02.03.02	Dictionary, Hash-table, string tokenizer		
	02.03.03	Bitset		
	02.03.04	Date: Date Comparison, String and time zones		
	02.03.05	Random, Observer interface		
	02.04	Input/ Output - Exploring JAVA I/O	[04]	
	02.04.01	The JAVA I/O classes and interface		
	02.04.02	File Namefilter & Directories		
	02.04.03	I/O stream classes: File input stream, file output stream, Byte array input stream, Byte array output stream, Filtered streams		
	02.04.04	Buffered streams: Buffered input stream, Buffered output stream, Pushback input stream, Sequence input stream		
<b>Total</b>			<b>60</b>	

**Books Recommended:-**

**Text Books:-**

1.	The Complete Reference - Java2, Fourth Edition, 2001	-	H. Schildt, Tata McGraw Hill
2.	Java: How to Program Java 2, Second Edition, 2001	-	Dietal and Dietel, Pearson Education
3.	Java	-	Depak Shukla

**Reference Books:-**

1.	Java Examples in a Nutshell, Third Edition, 2001	-	D. Hanagan 'O' Reilly
2.	A Programmers Guide to Java Certification, First Edition, 1999	-	K. Mughal and R.W. Rasmussen Pearson Education Comprehensive Primer Publication
3.	Java Foundation Classes	-	M.T. Nelson, Tata McGraw Hill

## DATA COMMUNICATION & NETWORK LAB

<b>Subject Code 1618506</b>	<b>Practical</b>			<b>No of Period in one session :</b>			<b>Credits  2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>	<b>:</b>	<b>50</b>	
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	<b>—</b>	<b>—</b>	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

**Rationale & Objective:**

**List of Experiments:**

	<b>Contents (Practical)</b>	<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	Consider a PCM system in which 24 signals are to be time-multiplexed. Each signal has a bandwidth from 400 to 3.4 KHz the sampling rate is 33.33% higher than the theoretical minimum, and 8 bits are used for each sample. Determine the output bit rate.		
<b>Unit -2</b>	A very heavily loaded 1-km-long 10-Mbps token ring has a propagation speed of 200m/ usec. Fifty stations are uniformly spaced around the ring. Data frames and are thus included as spare bits within the data frames and are effectively free. The token is 8 bits. Calculate the effective data rate of the ring.		
<b>Unit -3</b>	Explain the steps involved in computing the checksum for a given message frame, and hence find the complete frame bit pattern for the data given below: Data polynomial $D(x) = 1101011011$ Generator polynomial $G(x) = x^4 + x + 1$		
<b>Unit -4</b>	Write a program to simulate the operation of a token ring with no priorities. Take into account the walk time between stations and the time required to drain the ring before regenerating the token. Now change the simulator to allow stations to regenerate the token as soon as they are done transmitting, without waiting to drain the ring.		
<b>Unit -5</b>	Configure a machine to assign an IP address to it and also put a suitable subnet mask.		
<b>Unit -6</b>	Connect two machines to a hub and ping one machine from the other. Now change the subnet masks of the machines and see the effects.		
<b>Unit -7</b>	Connect a client to a server via a hub and telnet to log in to the server.		
<b>Unit -8</b>	Connect two machines to two different hubs and connect the hubs to a switch. Connect a server to the switch and telnet to the server from the machines.		

## INTERNET AND WEB TECHNOLOGY LAB

<b>Subject Code 1618507</b>	<b>Practical</b>			<b>No of Period in one session : 60</b>			<b>Credits  2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

### Rationale & Objective:

Internet is a great source of information and communication in present world. This course will allow student to explore basics of Internet. The students are expected to create web pages and to connect them, using features available in HTML and DHTML. This course allows students to study more about the web browsers present in present market and to compose them with this course the diploma student is expected to learn more about Internet and web technologies.

### List of Experiments:

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	Introduction of basic commands of HTML.	(06)	
<b>Unit -2</b>	To create a web page using basic feature of HTML.	(06)	
<b>Unit -3</b>	To create two web pages and connect them using functions available in HTML.	(06)	
<b>Unit -4</b>	To add pictures in a web page, changing in a web page, changing size and alignment of picture using HTML.	(04)	
<b>Unit -5</b>	Using the internet- Studying the basic features of web pages.	(06)	
<b>Unit -6</b>	To understand the differences and features available in different web browsers.	(04)	
<b>Unit -7</b>	Using the telnet to access the resources from the server.	(08)	
<b>Unit -8</b>	Creating web pages using Dynamic HTML and inter lanching them.	(08)	
<b>Unit -9</b>	Using Basics of Internet-Google search, E-mail etc., downloading files from Internet.	(06)	
<b>Unit -10</b>	Estimating Connection using dial up and troubleshooting the errors if any.	(06)	
<b>Total:-</b>		<b>(60)</b>	

### Books Recommended:

- |  |                               |
|--|-------------------------------|
| 1. Network Theory  | - A. Tanaunbomb               |
| 2. HTML-4 for world wide web, Wesley (Singapore) Pvt., New Delhi.                                | - Castro Addison              |
| 3. Using the world wide web, Prentice Hall of India Pvt., New Delhi                              | - Wall                        |
| 4. Internet for everyone, Vikas Publishing House Pvt. Ltd., New Delhi.                           | - Alexis Leon and Mathew Leon |
| 5. HTML 4.0 Unlashed, Tech Media Publication   | - Rick Dranell                |
| 6. Teach yourself HTML 4.0 with XML, DHTML and Java Script, IDG Books India Pvt. Ltd., New Delhi | - Stephanie, Cottrell, Bryant |

## SYSTEM MAINTENANCE LAB

<b>Subject Code 1618508</b>	<b>Practical</b>			<b>No of Period in one session : 60</b>			<b>Credits 2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>TA</b>	<b>:</b>	<b>15</b>	
				<b>CT</b>	<b>:</b>	<b>35</b>	

### **Rationale & Objective:**

This course will allow the students with hand on experience on various components of the computer system. The student can explore the PC and can learn to troubleshoot the problems and errors of any. The diploma students are expected to learn the basic of various component and there interconnection and troubleshooting, through this course.

<b>List of Experiments:</b>			
<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	To identify various components, devices and section of PC	(04)	
<b>Unit -2</b>	To study motherboard, Intel Pentium IV Processor (Introduction)	(06)	
<b>Unit -3</b>	To interconnect the system with the video monitor, mouse, keyboard etc. and testing the operation of PC.	(04)	
<b>Unit -4</b>	To interconnect hard disk, and to connect Input / Output devices such as printers and TV tuner card and to install them.	(06)	
<b>Unit -5</b>	Study the bus system and various signal lines.	(04)	
<b>Unit -6</b>	Study of peripherals and their speed and capacity	(08)	
<b>Unit -7</b>	To install various operating systems such as Windows, Unix and Linux.	(12)	
<b>Unit -8</b>	To study the protection required for Windows and Linux Operating System.	(06)	
<b>Unit -9</b>	To study the various functions such as disk fragmentation and add/ remove hardware / software functions under Windows Operating System.	(06)	
<b>Unit -10</b>	To study the Burning process of CD under the latest version of any CD writing CD. Study exiting multi session disk etc.	(04)	
<b>Total:-</b>		<b>(60)</b>	

### **Books Recommended:**

1. IBM PC Technical Manual -
2. Computer maintenance and repair - Schott Muller
3. Computer Architecture - Raffiquzzaman
4. Hardware and Software of PC, Willey Eastern Ltd., New Delhi. - S. K. Bose
5. Computer Installation and Trouble shooting, I.S.T.E. - M. Radhakrishnan and D. Balasubramaniam



## IN PLANT TRAINING AND VISIT TO WORKS (TW)

<b>Subject Code 1618509</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>30</b>	
	—	—	<b>4 week Continues</b>	<b>External Examiner</b>	<b>:</b>	<b>70</b>	

### **Rationale:**

A student is required to develop a skill to synthesize his knowledge, skill and attitudes gained while going through different courses. So, it is essential to expose the students to the world of work to be familiar with the real life situations and understand the problem there in.

### **Objective:**

So, “In plant training and visit to work” is introduced to place the students in actual work situations for stipulated period with the objectives:-

- To understand and conceptualize the subject based knowledge given in class room in the context of its application at work places.
- To develop understanding regarding the nature of activities, size and scale of operations & environments in which they are going to work.
- To understand how the technical, managerial, quality control, safety & other principles are being applied in real life situations.
- To know how a supervisor / technician perform day to day work and co-ordinate shop floor activities.
- To develop confidence amongst them to use and apply institute based knowledge and skills to solve practical problems in world of work.
- Develop interpersonal relationship, communication skill and positive attitudes.

### **CONTENTS**

The industries / organisations for industrial training / visit should be decided by institute faculty in consultation with respective industrial establishment. It is necessary that each organization is visited well in advance and activities to be performed by students are well defined. The chosen activities should be of curricular interest to students and of professional value to industrial / field organizations. Efforts should be made to provide opportunities of task oriented or problem solving oriented to students. Students are to prepare report of work done by them.

The report should include the followings:-

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit -1</b>	Introduction		
<b>Unit -2</b>	Types of industries.		
<b>Unit -3</b>	Location.		
<b>Unit -4</b>	Organisation Structure		
<b>Unit -5</b>	Technical Details.		
<b>Unit -6</b>	Marketing & Marketing Details.		
<b>Unit -7</b>	Man Power & its Management.		
<b>Unit -8</b>	Performance Details		

<b>Unit -9</b>	Future Programme		
<b>Unit -10</b>	Conclusion- <ul style="list-style-type: none"> <li>- Observations</li> <li>- Typical Characteristics</li> <li>- Area of Weakness</li> <li>- Suggestions</li> </ul>		
	Others-As introduced by faculty.		

It is advisable that the students may be assured both by Industry & Institute faculty. The suggested performance criteria for continuous assessment is given below:-

<b>Activity</b>	<b>Weightage in %</b>
Punctuality & Regularity	- <b>10 %</b>
Initiative in learning / working at site	- <b>05 %</b>
Level / proficiency of practical skills acquired	- <b>20 %</b>
Sense of responsibility	- <b>10 %</b>
Self Expression / Communication Skill	- <b>10 %</b>
Interpersonal Skills / Human relations	- <b>05 %</b>
Report Writing Skills	- <b>25 %</b>
Viva Voice	- <b>15 %</b>

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**V SEMESTER DIPLOMA IN LIBRARY & INFORMATION SCIENCE**  
**(Effective from Session 2016-17 Batch)**

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Management of Library & Information Centre	1641501	03	03	10	20	70	100	28	40	03
2.	Preservation & Conservation of Library Materials	1641502	03	03	10	20	70	100	28	40	03
3.	Information Source and Services	1641503	03	03	10	20	70	100	28	40	03
4.	Internet resources	1641504	03	03	10	20	70	100	28	40	03
5.	Advance Library Classification	1641505	03	03	10	20	70	100	28	40	03
			<b>Total:- 15</b>				<b>350</b>	<b>500</b>			

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Preservation & Conservation of Library Material Lab	1641506	06	03	15	35	50	20	02
7.	Advance Library Classification Lab	1641507	06	03	15	35	50	20	02
			<b>Total:- 12</b>				<b>100</b>		

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject	
7.	Advance Library Classification (TW)	1641508	06	15	35	50	20	02
8.	Preservation & Conservation of Library Materials (TW)	1641509	2 weeks continuous	30	70	100	40	03
			<b>Total:- 06</b>			<b>150</b>		
			Total Periods per week Each of duration one Hours = 33			<b>Total Marks = 750</b>		<b>24</b>

## MANAGEMENT OF LIBRARY & INFORMATION CENTRE

<b>Subject Code 1641501</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rational :**

Information Management system forms a part of information Management , which deals with all sorts of problems relatively to management of information techniques of management, Man- Power Management and ways of motivating people for better management.

**Objectives :**

A study of the theories of Information system management thus envisages financial, organizational and attitudinal training for the students of Information Technology.

S.No.	Topics
1.	Management : Concept and principles
2.	Physical Management and Library operation
3.	Human Resource Development
4.	Financial Management
5.	Report writing and statistics

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>Management : concept &amp; principles</u></b> <ul style="list-style-type: none"> <li>• Principles of Management</li> <li>• scientific Management and their application to libraries and Information centers.</li> <li>• Elements of Management Process (POSDCORB) Total Quality Management</li> </ul>		
<b>Unit-2</b>	<b><u>Physical Management and Library Operation</u></b> <ul style="list-style-type: none"> <li>• Library Building : Site Selection, Planning</li> <li>• Furniture , Fitting and Equipments : standards and specification</li> <li>• Routine and work Flow relating to different sessions</li> <li>• Elements of System Analysis of Library operations.</li> </ul>		
<b>Unit-3</b>	<b><u>Human Resource Development</u></b> <ul style="list-style-type: none"> <li>• Organizational Structure</li> <li>• Job description and Analysis : Job – Evaluation</li> <li>• Inter – Personal Relations</li> <li>• Recruitment Procedures</li> <li>• Motivation : Group Dynamics</li> <li>• Training and Development</li> <li>• Disciplines and Grievances</li> <li>• Performance Appraisal</li> </ul>		
<b>Unit-4</b>	<b><u>Financial Management</u></b> <ul style="list-style-type: none"> <li>• Resource Mobilization</li> <li>• Budgeting Techniques and Methods – PPBS, Zero based Budgeting etc</li> <li>• Budgetary Control</li> <li>• Cost Effectiveness and Cost Benefit Analysis Outsourcing</li> </ul>		
<b>Unit-5</b>	<b><u>Report writing and statistics</u></b> <ul style="list-style-type: none"> <li>• Report Writing</li> <li>• Library Statistics</li> </ul>		

**Books Recommended for Management of Library and Information Centers:**

**Reference Book:**

- |   |   |
|---|---|
| 1. TheLibrary and Information Manager’s Guide to online Service                   | - By Hoover, Knowledge Industry Publication, New York |
| 2. Encyclopedia of Library and Information Series- by Kent, Lacour Daily –vol- 20 | - By Msercel Deker, New York                          |
| 3. Information Technology Management  | - R.L. Mittal   |

6. Library and Inf. Management

- Narayan, G.J (1991)  
New Delhi : Prentice Hall of India

## PRESERVATION AND CONSERVATION OF LIBRARY MATERIALS

<b>Subject Code 1641502</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

### **Rational and Objective:**

One of the very important aspects of a librarian's obligation to the society is the preservation of the collection of reading materials in his custody in a good, healthy and usable condition. To enable him to fulfill this basic responsibility with the required competence, he has to have an adequate knowledge of the 'Whys' and 'Hows' of preservation and conservation. This subject explains the concept and its various implications. It also gives a general outline of the various preservation and conservation methods and techniques to create a general background for a more elaborate study.

After reading this subject students will able to:

- Know the concept of preservation and conservation and the role of the librarian in doing so;
- Plan the steps required for preservation of various library materials;
- **Understands the method used for effective preservation in a library; and**
- Get a clear insight into the techniques of conservation or restoration of book materials.

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Preservation and Conservation: overview: Overview Preservation and Conservation: Need and Purpose Historical Development of Writing Materials.		
<b>Unit-2</b>	Preservation of Print Materials Books Periodicals News Pamphlet		
<b>Unit-3</b>	Preservation of Non-Print Materials Palmleaves Manuscripts Fibers Floppies		
<b>Unit-4</b>	Hazards to Library Materials and Control measures Environmental Factor (Temperature, Humidity, Water, Light, Air Pollution, Smoke, Dust etc) Chemical Factors		
<b>Unit-5</b>	1. Binding 2. Types of Binding of Library Materials 3. Binding Material and their varieties 4. Binding Process 5. Standards for Library Binding.		

### **Book Recommended for Preservation and Conservation of Library Materials:**

1. Chakraborti, B. and Mahapatra, P.K. Library Collection: Selection and Preservation: Calcutta Word Press, 1970.
2. Dasgupta, Kalpana, ed. Conservation of Library Materials, Calcutta, National Library, 1988.
3. Durean, J.M. and elements D.W.G. Principles of the preservation of Library Materials. The Hague, IFLA, 1986.
4. Greenfield, N.J. Books: Their care and repair. New York, Wilson, 1983.
5. Singh, R. S. Conservation of documents in library, archiver and museums. Delhi, 1993.
6. IGNUO (1997): Preservation and Conservation of Library Materials.

<b>Subject Code 1641503</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

### Course Objectives

- To understand the different types of information sources and services.
- To develop familiarity with standard reform sources.
- To develop proficiency in using information literacy and make students information literate.
- To develop skills of effective information searching.

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<p><b><u>Nature of Information Sources</u></b></p> <p>(i) Concept of information sources</p> <p>(ii) Kinde of information source</p> <p>(iii) Basic Referme and information source and criteria of their evaluation.</p>		
<b>Unit-2</b>	<p><b><u>Reference Tools :</u></b></p> <p>(i) Bibliographical sources: National bibliographies INB &amp; BNB, Trade Bibliographice.</p> <p>(ii) Language Dictionaries</p> <p>(iii) Yearbook and directories</p> <p>(iv) Bigraphical sources</p> <p>(v) Geographical Sources</p>		
<b>Unit-3</b>	<p><b><u>Electronic Sources :</u></b></p> <p>(i) Magnetic Tapes, CD-ROM, and Multimedia.</p> <p>(ii) Electronic Books and electronic Journals.</p> <p>(iii) Electronic Database.</p>		
<b>Unit-4</b>	<p><b><u>Web Resources :</u></b></p> <p>(i) World wide web: Services and Facilities.</p> <p>(ii) Websites and Sources-Subject Gateways, Digital Libraries, Forums, Bulletin Board etc.</p>		
<b>Unit-5</b>	<p><b><u>INFORMATION Service :</u></b></p> <p>(i) Concept of , Type and Need.</p> <p>(ii) Type of services: Literature search, Documentation Service, Translation Service, Document Delivery Service etc.</p> <p>(iii) CAS and SDI service.</p>		

### **References books:**

1. New Dimension in information service and Technology-By Panda K.C. Karisiddapa
2. An Indian Model of Database Service by-Alihiri-NISSAT, New Delhi.
3. Basic of Library and information Science-KT Delhi, Vikash Publishing.

## INTERNET RESOURCES

<b>Subject Code 1641504</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

**Rationale :**

A information technician, who is to be trained to become a information professional, is required to be fully conversant with his duties, responsibility and authority in any organization. He is expected to have knowledge of the position that he may hold in an organization. He is also to be trained to keep best professional tradition, work culture and ethics how to maintain values of the organization to which he may belongs.

Today we are at the threshold of yet another revolution. The role of information has attained new properties with the acceleration of research and development, mounting social and population pressure, changing technological environment and increasing need of common man are walls man in selective professions.

**Objective :**

After covering the course a student will be able to :-

- Identify the role of a information technician, his/ her horizontal/ vertical linkages.
- Knowledge of Internet Resources, which helps in information day to day.
- Be aware with growing needs of information service.
- Be aware information revolution.
- Understand the Internet sources and to gain optimum importance through help actual user's.
- Bring attitudinal for making him an honest professional to the point approach towards use of network for the advancement in information storage and retrieval.

S.No.	Topics	Periods
1.	Types of Resources (By Form)	
2.	Types of Resources (By Subject)	

Contents (Theory)		Hrs/week	Marks
<b>Unit-1</b>	<p><b><u>TYPES OF RESOURCES (BY FORM) :</u></b></p> <p>A. 1.1 Paperless Library Service : Introduction and Utilization.</p> <p>A. 1.2 Meta Documents : Introduction and Types.</p> <p>A. 1.3 Developing Process.</p> <p>A. 1.4 User's Study : Methods and Techniques of users studied &amp; Evaluation of User's Studies.</p> <p>A. 1.5 User's Profile and Training.</p> <p>B. 1.1 Information Resources : Tools and Techniques.</p> <p>B. 1.2 Computer Application.</p> <p>B. 1.3 Telephone or TELNET.</p> <p>B. 1.4 Modem.</p> <p>B. 1.5 E-Mail</p> <p>B. 1.6 Fax</p> <p>B. 1.7 WWW</p> <p>B. 1.8 FTP</p> <p>B. 1.9 ARCHI</p> <p>B. 1.10 GOPHER</p> <p>B. 1.11 VERONICA</p> <p>B. 1.12 WAIS</p> <p>C : O1 : 01: Digital Library</p> <p style="padding-left: 20px;">01 : Introduction and utilization</p> <p style="padding-left: 20px;">02 : Book Keeping and packing</p> <p style="padding-left: 20px;">03 : Software packing:</p> <p style="padding-left: 20px;">LIBSYS, INFLIBSYS &amp; SOUL</p>		



<b>Unit-2</b>	<b><u>TYPES OF RESOURCES (BY SUBJECT) :</u></b> 02 : 01 : <u>Science and Technology :</u> OCLC, NICNET, INDONET, 02 : 02 : <u>Social Scienc</u> EURONET, DESNET, ADJNET, BONET 02 : 03 : <u>Huminities</u> INFLIBNET, DELNET, CALIBNET, ERNET, INTERNET		
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**Books Recommended for Internet Resources :**

**Reference Books :**

1. Developing of an Information and Library Network - Apporao (ed) – UGC, New Delhi
2. कम्प्यूटर और सूचना तकनीक – शंकर सिंह— पूर्वाचल प्रकाशन, दिल्ली

## ADVANCE LIBRARY CLASSIFICATION

<b>Subject Code 1641505</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

### Rational & Objectives

Arrangement of book and non-book materials according to subject, Author, time, place etc is the basic need of a library. Classification of reading materials according to recognized devices have been incorporated in the classification theory paper. The methods are put in to practice in this chapter. For the IIIrd and IV Semester students classification according to DDC 19<sup>th</sup> edition is practiced. Colon classification scheme is in range for V Semester students.

#### **S.No. Topic**

- |    |  |    |
|----|--|----|
| 1. | Species of classification Scheme       | 10 |
| 2. | Some important canon of classification | 15 |
| 3. | Fundamental categories and devices     | 10 |
| 4. | Book Number                            | 10 |
| 5. | Salient features of CC and DDC         | 15 |

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>Species of classification scheme</u></b> 01.01 Prefacated Period 01.02 Transition to Facet period 01.03 Facet Period 01.04 Restricted Facet formula Period 01.05 Un-restricted Facet formula period 01.06 Relativity period		
<b>Unit-2</b>	<b><u>Some Important Canon of classification</u></b> 02.01 Canons for Idea Plane 02.02 Canons for Verbal Plane 02.03 Canons for Notational Plane 02.04 Canons for Mnemonics		
<b>Unit-3</b>	<b><u>Fundamental Categories and Devices</u></b> 03.01 Fundamental Categories 03.02 Detailed study of PMEST 03.03 Use and identification of different facets in titles 03.04 Devices 03.05 Alphabetical, chronological, subject, Geographical device etc. 03.06 Phase Relation		
<b>Unit-4</b>	<b><u>Book Number</u></b> 04.01 Call Number 04.02 Book Number, Collection Number 04.03 Author Mark, Merril, Biscoe, Jast and Browne 04.04 Ranganathan's Book Numbering System		
<b>Unit-5</b>	<b><u>Salient features of CC and DDC</u></b> 05.01 Salient features of colon classification 6 <sup>th</sup> ed 05.02 Salient features of DDC 19 <sup>th</sup> ed 05.03 Comparative study of CC and DDC		

### Book Recommended:

Text Book:

- |    |                            |   |                  |
|----|----------------------------|---|------------------|
| 1. | Granthalaya Classification | — | G D Bhargav      |
| 2. | Library Classification     | — | by Srivastava    |
| 3. | Library Classification     | — | by Parkhi        |
| 4. | Library Classification     | — | by Krishan Kumar |

### Reference Book:

- |    |   |   |                        |
|----|---|---|------------------------|
| 1. | Colon classification 6 <sup>th</sup> ed | — | by Dr. S R Ranganathan |
| 2. | DDC 19 <sup>th</sup> ed                 | - | Melvil Dewey           |

## PRESERVATION AND CONSERVATION OF LIBRARY MATERIAL LAB

<b>Subject Code 1641506</b>	<b>Practical</b>			<b>No of Period in one session :</b>			<b>Credits 2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

### Rational & Objectives

Preservation and Conservation of the Library Materials insure service to the Library stock as well as users. It starts from the Point of use and print and non print Material. The Present day innovation of Modern Technology has afforded a mass problems for storage and Presentation of the Library material.

The Course has been Planed to train candidate for how to preserve Library Material under Library Home joh. So it is the most important part of Library service.

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Preservation of print Material-Books, Periodicde, News, Pamphlet.		
<b>Unit-2</b>	Preservation of Non-Print Materials-Palmleaves, Manuicript, Fibers, Floppies.		
<b>Unit-3</b>	Hazards to Library Moterials and Control measures. Environmental Faston (Temperature, Humidity, Wrter, Light, air Pollution, Smoke, Dust etc.) Chemical Factors.		
<b>Unit-4</b>	Binding- Binding Process, standard for Library Binding.		
<b>Total</b>			

## ADVANCE LIBRARY CLASSIFICATION LAB

<b>Subject Code 1641507</b>	<b>Practical</b>			<b>No of Period in one session :</b>			<b>Credits 2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
			<b>External</b>	<b>:</b>	<b>35</b>		

### Rational & Objective

Arrangement of book and non book materials according to subject another time, place etc is the basic need at a library classification of reading material according to recognized devices have been incorporated in the classification theory paper. The methods are put in to practice in this chapter for the III<sup>rd</sup> and IV Semester student's classification accordingly to DDC 19<sup>th</sup> edition is practiced. Colon classification scheme is in range for V Semester students.

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>1. Introducing various devices as enumerated in</b> a. Colon Classification Scheme b. Dewey Decimal Classification Scheme		
<b>Unit-2</b>	<b>1. Constructing number of complex and interdisciplinary titles according to</b> a. Colon 6 <sup>th</sup> ed b. DDC 19 <sup>th</sup> ed		
	<b>2. Practice of at least 200 complex title according to</b> a. Colon 6 <sup>th</sup> ed b. DDC 19 <sup>th</sup> ed		

## ADVANCE LIBRARY CLASSIFICATION (TW)

<b>Subject Code 1641508</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>External Examiner</b>	<b>:</b>	<b>35</b>	

### Rational & Objective

Arrangement of books and non-book materials according to subject, author, time, place etc is the basic need of a library. Classifications of reading materials according to recognised devices have been incorporated in the classification theory paper. The methods are put in to practice in this chapter for the IIIrd and IV Semester student's classification according to DDC 19<sup>th</sup> edition is practiced. Colon classification scheme is in vogue for the V Semester Students.

<b>Contents (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Classification of books & periodicals according to Colon 6 <sup>th</sup> ed.		
<b>Unit-2</b>	Classification of 50 titles of one's own Institute Library.		
<b>Total</b>			

## **PRESERVATION AND CONSERVATION OF LIBRARY MATERIALS (TW)**

<b>Subject Code 1641509</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>30</b>	
	—	—	<b>2 Week Continues</b>	<b>External Examiner</b>	<b>:</b>	<b>70</b>	

**Rational and objective:**

Preservation and Conservation of the Library Materials insures service to the library stock as well as users. It starts from the point of use o and print and non-print material. The present day innovation of modern technology has offered a mars of problems for storage and presentation of the library materials.

The course has been planed to trained candidate for How to preserve Library Material under Library Home job. So it is the most important part of Library Service.

<b>Contents (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	Preservation of print Material-Books, Periodicde, News, Pamphlet.		
<b>Unit-2</b>	Preservation of Non-Print Materials-Palmleaves, Manuicript, Fibers, Floppies.		
<b>Unit-3</b>	Hazards to Library Moterials and Control measures. Environmental Faston (Temperature, Humidity, Wrter, Light, air Pollution, Smoke, Dust etc.) Chemical Factors.		
<b>Unit-4</b>	Binding- Binding Process, standard for Library Binding.		
<b>Total</b>			

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**V SEMESTER DIPLOMA IN MODERN OFFICE PRACTICE**  
**(Effective from Session 2016-17 Batch)**

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Professional Language & Comm. Skill (Eng + Hindi)	1626501	03	03	10	20	70	100	28	40	03
2.	Office Equipment and Services & Office Automation	1626502	03	03	10	20	70	100	28	40	03
3.	Commercial & Industrial Law	1626503	03	03	10	20	70	100	28	40	03
4.	Office Organization	1626504	03	03	10	20	70	100	28	40	03
5.	Business Org. & Management	1626505	03	03	10	20	70	100	28	40	03
<b>Total:- 15</b>							<b>350</b>	<b>500</b>			

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Office Equipment & Services Lab	1626506	06	03	15	35	50	20	03
<b>Total:- 06</b>							<b>50</b>		

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits	
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject		
7.	Office Equipment & Services (TW)	1626507	06	15	35	50	20	02	
8.	Professional Language & Comm. Skill (TW)	1626508	06	15	35	50	20	02	
9.	In office training & visit to org. (Typing/Shorthand/Stenography)	1626509	4 weeks continuous	30	70	100	40	02	
<b>Total:- 12</b>							<b>200</b>		
Total Periods per week Each of duration one Hours = 33							<b>Total Marks = 750</b>	<b>24</b>	

**PROFESSIONAL LANGUAGE & COMMUNICATION SKILL**

<b>Subject Code 1626501</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
			<b>CT</b>	<b>:</b>	<b>10</b>		
				<b>:</b>	<b>20</b>		

**PART- I PLCS (HINDI)**

उद्देश्य

विभिन्न शैक्षणिक, प्रशासनिक एवं व्यावसायिक स्तरों पर हिन्दी भाषा के स्वरूप से छात्रों को परिचित कराना पाठ्यक्रम का उद्देश्य है। सूचना, संचार, तकनीकी, उद्योग, व्यवसाय बाजार आदि के क्षेत्रों में हिन्दी भाषा के विभिन्न प्रयोग एवं प्रभाव में होनेवाली वृद्धि को देखते हुए यह आवश्यक हो जाता है कि छात्र हिन्दी भाषा के विभिन्न प्रयोग में सक्षम हो सकें। हिन्दी भारत की राष्ट्रभाषा, राजभाषा, व्यवहार-भाषा तो है ही यह शैक्षणिक भाषा के साथ-साथ एक व्यावसायिक भाषा का रूप भी ले चुकी है। यह शिक्षा का माध्यम भी है। इस भाषा में ज्ञान – विज्ञान, वाणिज्य, उद्योग, व्यवसाय, पत्रकारिता, तकनीक आदि से संबंधित अपनी शब्दावली है। हिन्दी भाषा के इन विभिन्न रूपों को ध्यान में रखते हुए इस पाठ्यक्रम की रूप रेखा तैयार की गयी है। पाठ्यक्रम के पूरा होने के पश्चात् छात्र व्यावसायिक संचार के सैद्धान्तिक पक्ष से परिचित होंगे। व्यवसाय – जगत में होनेवाले संचार से परिचित होंगे। जन – संचार माध्यमों के द्वारा अपने विचारों के अभिव्यक्त करने में सक्षम हो सकेंगे। अनुवाद के महत्व से परिचित होंगे।

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>हिन्दी राजभाषा के रूप में</b> क. राष्ट्रभाषा हिन्दी ख. राजभाषा हिन्दी ग. सम्पर्क भाषा एवं मानक भाषा के रूप में हिन्दी घ. राष्ट्रभाषा एवं राजभाषा में अंतर ड. वैज्ञानिक और तकनीकी क्षेत्र में हिन्दी भाषा की स्थिति	[05]	
<b>Unit-2</b>	<b>व्यावसायिक पत्राचार</b> क) आवेदन – पत्र ख) क्रयादेश संबंधी पत्र ग) बैंक – पत्र घ) बीमा – पत्र ड.) संपादक के नाम पत्र च.) बायोडाटा	[05]	
<b>Unit-3</b>	<b>बैंकों में हिन्दी प्रयोग के विविध स्तर</b> क) वर्तमान स्थिति ख) समस्याएँ और समाधान ग) शब्दावली	[05]	
<b>Unit-4</b>	<b>जन संचार माध्यम और हिन्दी</b> क) समाचार – पत्र ख) दूरदर्शन ग) रेडियो ( आकाशवाणी )	[05]	
<b>Unit-5</b>	<b>अनुवाद</b> क) स्वरूप ख) प्रकार ग) महत्व घ) हिन्दी से अंग्रेजी में अनुवाद ड.) अंग्रेजी से हिन्दी में अनुवाद	[05]	



Unit-6	<b>व्यक्तित्व विकास</b> क) सामूहिक परिचर्चा ख) वार्ता ग) शुद्ध उच्चारण का अभ्यास घ) वाद – विवाद ड.) हिन्दी शब्द – सम्पदा	[05]	
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### संदर्भ पुस्तकें

- |    |   |   |   |
|----|---|---|---|
| 1. | प्रयोजनमूलक हिन्दी संरचना एवं अनुप्रयोग | – | डा० रामप्रकाश, डा० दिनेश गुप्त<br>राधाकृष्ण प्रकाशन   |
| 2. | अंग्रेजी – हिन्दी शासकीय प्रयोग कोश     | – | गोपीनाथ श्रीवास्तव<br>राजपाल एंड सन्स                 |
| 3. | एडवांस लर्नर्स डिक्शनरी                 | – | आक्सफोर्ड यूनिवर्सिटी प्रेस                           |
| 4. | व्यावसयिक हिन्दी                        | – | डा० रामप्रकाश, डा० दिनेश गुप्त                        |
| 5. | Business Communication                  | – | Keval J. Kumar, Jaico Books<br>Jaico Publishing House |
| 6. | हिन्दी विविध व्यवहारों की भाषा          | – | सुवास कुमार   |
| 7. | राजभाषा समस्या : व्यावहारिक समाधान      | – | आचार्य देवेन्द्रनाथ शर्मा                             |
| 8. | हिन्दी भाषा शिक्षण                      | – | डा० भोलानाथ तिवारी, केलाशचन्द्र<br>भाटिया             |

**Rationale:**

Communication is a vital aspect of the managerial process. In fact superior subordinate relation cannot thrive in through effective and meaningful communication. Use of appropriate word, proper construction of sentences, decorous language and coherent presentation conforming to widely accepted corporate practices make communication effective, effective communication includes exchange of thoughts, facts, opinion and information by two or more persons so as to bring about understanding or confidence. Communication may be through words, symbols, letters or actions. It is all pervasive and it influences every function of management. Effective communication helps to build a highly dedicated and motivated work force needed to achieve the objective. Thus the success of all managerial function largely depends upon effective communication. The subject, therefore, assumes special importance in general and to the students of modern office management in particular. As such an attempt has been made in the given course content to give an exposure to students of various communication situations in general.

**Objective:**

The main objectives for introducing the subject are as under :

- (i) To develop among students in general the habit of effective communication and develop among them the abilities for implementing the same in actual practice.
- (ii) To lay down a firm foundation of communication capabilities of a high order commensurate with challenging professions.
- (iii) To make the students conversant with clear, simple, easy and understandable language and practices prevalent in trade and business world.
- (iv) To make the students understand the importance of securing and maintaining co-operation between superiors and subordinates for accomplishment of enterprise objectives through communication.
- (v) To make the students aware of and to utilize the informal organization to supplement the communication channels of the formal organization.

S.No.	Chapter
01	Introduction
02	Oral & Written Communication
03	Office Orders
04	Business Letters
05	Economic & Commercial Essays
06	Collection and Presentation of Data and Audio- Visual Aid
07	Meeting of Board and then Committees

Contents (Theory)		Hrs/week	Marks
<b>Unit-1</b>	<b><u>INTRODUCTION:</u></b> Essentials of good English Enriching Vocabulary		
<b>Unit-2</b>	<b><u>ORAL &amp; WRITTEN COMMUNICATION:</u></b> Oral Communication: - Introduction Effective oral communication: - Dictation - Telephoning and - Public Speaking Written Communication: - Pattern - Form and Media of Communication - Essentials of Communication Written Communication analysed précis writing		
<b>Unit-3</b>	<b><u>OFFICE ORDERS:</u></b> Office circulars Office Notes- Suggestion- Complaints and office memorandum Office manuals- Internal enquiries and reports Advertisement & Press Release		
<b>Unit-4</b>	<b><u>BUSINESS LETTERS:</u></b> - Introduction - Format of a business letter - Style of a business letter (written letter/internurse/appointments/rejected letters, letter of enquiries/replies, status enquiring & replies, orders & complaints, collection and follow up letters, circular letters, miscellaneous correspondence.)		
<b>Unit-5</b>	<b><u>ECONOMIC &amp; COMMERCIAL ESSAYS:</u></b> Steps in economic & commercial essays		

<b>Unit-6</b>	<u><b>COLLECTION AND PRESENTATION OF DATA AND AUDIO- VISUAL AID:</b></u> - Collection of data- diagram - Graphic Method - Rules for framing data collection and presentation Audio Visual aid		
<b>Unit-7</b>	<u><b>MEETING OF BOARD AND THEN COMMITTEE:</b></u> Board's report and Chairman's speech.		

## OFFICE EQUIPMENTS AND SERVICES & OFFICE AUTOMATION

<b>Subject Code 1626502</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:**

S. No.	Topics	Periods
01	Office Equipment and Machine	
02	Mail Service, Communication and Telecommunication	
03	Postal Services	
04	Use of different Machines (Practical) (E.T.)	

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>OFFICE EQUIPMENT AND MACHINE:</b> 01.01 Basic Principle of Selecting Furniture, Equipment and Machine. 01.02 Office Furniture viz. Desk, Table, Chair and Miscellaneous types 01.03 Office Machine and its Advantage and Disadvantages 01.04 Mechanisation of office work 01.05 Types of Office Machines and their uses: Typewriter, Stenographic Tools, Duplicating Machines, Imprinting Machines and Processes, Computing, Accounting and Tabulating Machines, Punching Machines, Electronic Computer, Dictating Machines, Mailing Machines, Franking Machines, FAX, Intercom and Telephone, Teleprinter, PABX, PBX, Addressing Machine, Xerox and other Miscellaneous Machine.	<b>[14]</b>	
<b>Unit-2</b>	<b>MAIL SERVICE, COMMUNICATION AND TELECOMMUNICATION:</b> 02.01 Mailing Department, Centralization of Mail Services, Handling of Inward Mail and Outward Mail. 02.02 Internal Communication like Oral and Written Communication 02.03 External Communication viz. use of telephone and guidelines thereto, Telephone tones, Long Distance Calls, Telephone numbers, Cordless Telephone, Intercom Services, Emergency Call, Telephone Directories and Yellow Pages, Fax.	<b>[20]</b>	
<b>Unit-3</b>	<b>POSTAL SERVICES:</b> 03.01 Letters, Registered Letters, Under Certificate of Posting, Foreign Letters, Parcels, Business Reply Services and Telegrams.	<b>[18]</b>	
<b>Unit-4</b>	<b>USE OF DIFFERENT MACHINES (PRACTICAL):</b>	<b>[08]</b>	
<b>Total</b>		<b>60</b>	

<b>OFFICE AUTOMATION</b>			
<b>UNIT-1</b>	<b><u>THE MODERN OFFICE: Functions and Problems</u></b>	<b>[ ]</b>	
	- Introduction		
	- Business Communication		
	- Informative Management		
	- Conventional Data Processing Methods		
	- Office Information System		
	- Information Cycle		
	- System Attributes		
	- Problems of the Present Office		

<b>UNIT-2</b>	<b><u>THE ELECTRONIC OFFICE:</u></b>	[ ]	
	- Introduction		
	- Need for Electronic Devices		
	- Office Automation		
<b>UNIT-3</b>	<b><u>AUXILIARY WP EQUIPMENT:</u></b>	[ ]	
	- Introduction		
	- Media Input Devices		
	- Optical Character Reader (OCR)		
	- Graphics Tablets		
	- Dictation Systems		
	- Transcription System		
	- Micrographics Equipment		
	- Graphic Plotters		
	- Duplicators		
	- Photocopying Machines		
	- Electronic Copiers		
	- Photo composers		
	- Collating and Binding Machines		
	- Facsimile System		
	- Telex Equipment		
	- Fax		
	- E-Mail		
	- Teleconferencing		
	- Tele-Text		
	- Desk Top Publisher		
	- Electronic Type-Writer		
- Voice-Mail			
- Video Text			
- Dicta Phone			
- Telephone			
- EPBX			
- Paging Service			
<b>UNIT-4</b>	<b><u>ELECTRONIC MESSAGE TRANSMISSION:</u></b>	[ ]	
	- Introduction		
	- Types of Communications		
	- Elements of Message Transmission System		
	- Transmission Channels		
	- Transmission Networks		
	- Nodal Hardware		
	- Automex Message Switcher		
	- SFT System		
- Local Area Network			
<b>UNIT-5</b>	<b><u>COMPUTER MAIL/MESSAGE SYSTEM:</u></b>	[ ]	
	- Introduction		
	- Message Distribution		
	- Voice Mail System (VMS)		
	- Transmission of Text		
	- Video Text		
	- Transmission of Pictures		
	- Teleconferencing		
- Computerized Teleconferencing			

<b>UNIT-6</b>	<b><u>ELECTRONIC MESSAGE TRANSMISSION:</u></b>	[ ]	
	- Introduction		
	- Capabilities of WP System		
	- Benefits of WP System		
	- Input Process Output Concept		
	- Hardware and Software		
<b>UNIT-7</b>	<b><u>WORD PROCESSING AT WORK:</u></b>	[ ]	
	- Introducing		
	- Repetitive Letter		
	- Standards Documents		
	- Special Reports		
<b>UNIT-8</b>	<b><u>WP HARDWARE:</u></b>	[ ]	
	- Introduction		
	- Input Component		
	- Processing Unit		
	- Storage Devices		
<b>UNIT-9</b>	<b><u>WP SOFTWARE:</u></b>	[ ]	
	- Introduction		
	- Word Processing Software		
	- Text Editing		
	- Print-Time Controls		
	- Specials Functions		
	- Operating Processing Software		
	- Creating of Text		
- Output Formatting			
- Utility Functions			
<b>Total</b>			

**Books Recommended:**

- |   |                                    |
|---|------------------------------------|
| 1. Secretarial Duties                     | Jhon Haurison                      |
| 2. A Text Book of Office Organisation and | G.N. Sahoo Management P.P. Patnaik |

## COMMERCIAL & INDUSTRIAL LAW

<b>Subject Code 1626503</b>	<b>Theory</b>			<b>No of Period in one session :</b>			<b>Credits  3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>Group A</b>	[25]	
	<b>1.01 Law of Contract :</b> 1.01.01 Definition of Essential Elements of a Contract 1.01.02 Offer and Acceptance 1.01.03 Consideration 1.01.04 Void and Voided Agreements 1.01.05 Capacity of Parties 1.01.06 Free Consent 1.01.07 Performance of contracts 1.01.08 Termination of contracts 1.01.09 Indemnity and Guarantee 1.01.10 Bailment and pledge 1.01.11 Law of Agency	[04]	
	<b>1.02 Law relating to Negotiable Instruments</b> 1.02.01 Definition and Characteristics of various Negotiable Instruments like promissory Notes Cheque and Bills of Exchange etc.1 1.02.02 'Holder' and 'Holder' in due course		
<b>Unit-2</b>	<b>Group B</b>	[25]	
	<b>2.01 Factories Act :</b> 2.01.01 Definitions under the factories Act. 2.01.02 Objects and application of the Act. 2.01.03 Provisions relation to Health safety and welfare of the workers. 2.01.04 Provisions relation to working Hours, Holiday, Annual leave etc.	[04]	
	<b>2.02 Workmen's compensation. Act</b> 2.02.01 Definition, Scope, Rules regarding workmen's compensation.	[06]	
	<b>2.03 Industrial Disputes Act.</b> 2.03.01 Definition 2.03.02 Referring of Disputes, Strikes and Lock outs lay off and Retrenchments	[06]	
	<b>2.04 Maximum Wages Act.</b> 2.04.01 Definitions 2.04.02 Fixation of Minimum Wages rate, working hours and rate of claims wage.	[06]	
	<b>2.05 Payment of wages Act.</b> 2.05.01 Object, Scope and Rules regarding payment of wages.	[05]	
<b>Total</b>		<b>75</b>	

### **BOOKS RECOMMENDED**

- |                                    |                           |
|------------------------------------|---------------------------|
| 1. Commercial & Industrial         | - N.D. Kapoor             |
| 2. Commercial Law & Industrial Law | - Das Gupta               |
| 3. Commercial Law                  | - M.C. Shukla Sen & Mehta |

## OFFICE ORGANIZATION

<b>Subject Code 1626504</b>	<b>Theory</b>			<b>No of Period in one session : 60</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
			<b>CT</b>	<b>:</b>	<b>20</b>		

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>Modern Office</b> 1. 00 Meaning, Importance and Function.	<b>[04]</b>	
<b>Unit-2</b>	<b>Office Management</b> 2. 01 Meaning and Importance of Office System and Procedures 2. 02 Duties, Responsibilities and Qualities of an Office Manager.	<b>[04]</b>	
<b>Unit-3</b>	<b>Organisation Structure</b> 3. 01 Special features of office work 3. 02 Contralisation of office services 3. 03 Job sub division and specialization 3. 04 Organization charts and manuals 3. 05 Principal Departments of a modern office	<b>[10]</b>	
<b>Unit-4</b>	<b>Office Accommodation and working Environment</b> 4. 01 Office Lay out, Lighting Ventilation, Interior Decoration, Maintaining a proper working Environment.	<b>[02]</b>	
<b>Unit-5</b>	<b>Management of Office Records</b> 5. 01 Filling and Indexing 5. 02 Proper work in a modern Office 5. 03 Data Processing 5. 04 Record Management 5. 05 Essentials of a Good Filling System 5. 06 Classification and arrangement 5. 07 Filling Methods 5. 08 Centralised Vs decentralized Filling 5. 09 Meaning of Indexing 5. 10 Types of Index, and Loose leaf Binders.	<b>[20]</b>	
<b>Unit-6</b>	<b>Office Stationery and forms</b> 6. 01 Types of Stationery 6. 02 Good System of Regulating stationery 6. 03 Selection, Purchase, Storage and Control of Stationery 6. 04 Various Types of Office forms and their rational use	<b>[08]</b>	
<b>Unit-7</b>	<b>Supervision and work Measurement</b> 7. 01 Meaning and Principles of supervision 7. 02 The duties and responsibilities of Office supervisor 7. 03 The importance and purposes of measurement of Office work. 7. 04 Units of Measurement and setting Standards	<b>[08]</b>	
<b>Unit-8</b>	<b>Safety and Security arrangement in an Office</b> 8. 01 The Importance of Maintaining Safety and Security in an Office 8. 02 Measures for ensuring Safety and Security arrangement in an Office.	<b>[04]</b>	
<b>Total</b>		<b>60</b>	

**BOOK RECOMMENDED :-**

1. Office Organisation and Management - S. P. Arora
2. Office Organisation and Management - T. B. Susar & G. N. Sahco
3. Fundamental of Office Management - Mahesh
4. Office Organisation and Management - P. K. Ghosh
5. Office Management - P. K. Mitra



## BUSINESS ORGANIZATION & MANAGEMENT

<b>Subject Code 1626505</b>	<b>Theory</b>			<b>No of Period in one session : 62</b>			<b>Credits 3</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:**

S. No.	Topics
01	Meaning and Classification of Business
02	Forms of Business Organisation
03	Plant location and layout
04	Purchase Organisation and Control
05	Store Organisation and Control
06	System of Wage Payment
07	Production Planning and Control
08	Cost Analysis

<b>Contents (Theory)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b>MEANING AND CLASSIFICATION OF BUSSINESS</b>	<b>[06]</b>	
<b>Unit-2</b>	<b>FORMS OF BUSINESS ORGANISATION:</b> 02.01 Meaning Characteristics, Merits and Demerits and Demerits and Demerits of Sole Trading Business 02.02 Meaning Characteristics, Merits and Demerits and Demerits and Demerits of Partnership Firm 02.03 Meaning Characteristics, Merits and Demerits and Demerits and Demerits of Co-operative societies 02.04 Meaning Characteristics, Merits and Demerits and Demerits and Demerits of Joint Stock Company 02.05 Meaning Characteristics and forms of Public Enterprises	<b>[10]</b>	
<b>Unit-3</b>	<b>PLANT LOCATION AND LAYOUT</b>	<b>[06]</b>	
<b>Unit-4</b>	<b>PURCHASE ORGANISATION AND CONTROL:</b> 04.01 Importance of Purchase Department 04.02 Function of Purchasing Department 04.03 Steps in Purchasing 04.04 Centralized Purchasing 04.05 Decentralized Purchasing	<b>[08]</b>	
<b>Unit-5</b>	<b>STORES ORGANISATION AND CONTROL:</b> 05.01 Functions of Stores Department 05.02 Procedure for issue of Materials 05.03 Maintenance of Stores Records 05.04 Location of Stores 05.05 Duties of a Storekeeper 05.06 Meaning of Inventory Control 05.07 Techniques of Inventory Control	<b>[10]</b>	
<b>Unit-6</b>	<b>SYSTEM OF WAGE PAYMENT:</b> 06.01 Meaning, Advantage and Disadvantages of Piece rate System 06.02 Meaning, Merits and Demerits of Time rate System 06.03 Incentive Plans 06.04 Classification of Wages	<b>[06]</b>	
<b>Unit-7</b>	<b>PRODUCTION PLANNING AND CONTROL:</b> 07.01 Meaning and Importance of Production Planning and Control 07.02 Steps in Production, Planning and Control	<b>[06]</b>	
<b>Unit-8</b>	<b>COST ANALYSIS:</b> 08.01 Meaning of Cost 08.02 Element of Cost 08.03 Classification of cost 08.04 Meaning and Classification of Overheads 08.05 Preparation of a simple Cost Sheet	<b>[10]</b>	
<b>Total</b>		<b>62</b>	

## OFFICE EQUIPMENT AND SERVICES LAB

<b>Subject Code 1626506</b>	<b>Practical</b>			<b>No of Period in one session : 60</b>			<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	<b>—</b>	<b>—</b>	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

Sl.No.	Topics	Periods
1.	कार्यालय संबंधी मशीनें	20
2.	डाक व्यवस्था संबंधी मशीनें	20
3.	संप्रे ाण संबंधी मशीनें	20

<b>Contents (Practical)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	कार्यालय संबंधी मशीनें	<b>20</b>	
<b>Unit-2</b>	डाक व्यवस्था संबंधी मशीनें	<b>20</b>	
<b>Unit-3</b>	संप्रे ाण संबंधी मशीनें	<b>20</b>	
	Total	<b>60</b>	

विभिन्न प्रकार के मशीनों को संचालित करने का ज्ञान एवं रख-रखाव की विस्तृत जानकारी।

**OFFICE EQUIPMENT AND SERVICES (TW)**

Subject Code 1626507	Term Work			No of Period in one session :			Credits 2
	No. of Periods Per Week			Full Marks			
	L	T	P/S	Internal Examiner	:	50	
	—	—	06	External Examiner	:	35	

S. No.	Topics	Periods
1.	कार्यालय संबंधी मशीनें	
2.	डाक व्यवस्था संबंधी	
3.	संप्रेषण संबंधी मशीनें	

Contents (Term Work)		Hrs/week	Marks
Unit-1	कार्यालय संबंधी मशीनें		
Unit-2	डाक व्यवस्था संबंधी मशीनें		
Unit-3	संप्रेषण संबंधी मशीनें		

विभिन्न प्रकार की मशीनों को संचालित करने का ज्ञान एवं रख-रखाव की विस्तृत जानकारी।

## PROFESSIONAL LANGUAGE & COMMUNICATION SKILL (TW)

<b>Subject Code 1626508</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>External Examiner</b>	<b>:</b>	<b>15</b>	
						<b>35</b>	<b>2</b>

### PART-I PLCS (HINDI)

**व्याख्यान 30**

#### उद्देश्य

व्यवस्था संचार के सात्रिक पाठ्यक्रम में व्यावसायिक हिन्दी के विभिन्न रूपों पर विचार किया या है एवं अभ्यास पर विशेष बल दिया गया है। इस पाठ्यक्रम को पूरा करने के पश्चात् छात्र –

- व्यावसायिक लेखन क्षमता विकसित कर सकेंगे।
- पर्याप्त अभ्यास के द्वारा अपने व्यक्तित्व को विकसित करने का प्रयास कर सकेंगे।

#### विषय :-

1. समाचार – पत्रों का अवलोकन। विभिन्न पुस्तकों का अध्ययन
2. विभिन्न प्रकार के लेखन का अभ्यास
3. हिन्दी से अंग्रेजी में अनुवाद का अभ्यास
4. अंग्रेजी से हिन्दी में अनुवाद का अभ्यास
5. शुद्ध उच्चारण का अभ्यास
6. वैज्ञानिक, तकनीकी एवं व्यावसायिक का शब्दावली का अध्ययन
7. समाचार – पत्रों में प्रकाशित समाचारों, प्रेस – सूचना, विज्ञप्ति आदि का हिन्दी और अंग्रेजी में अनुवाद का अभ्यास।
8. बायोडाटा

#### परीक्षा का आयोजन

सत्र के अंत में छात्रों द्वारा पाठ्यक्रम के सभी विषयों से संबंधित अभ्यास का अभिलेख प्रस्तुत करना आवश्यक होगा।

आंतरिक अंक	10
वार्षिक परीक्षा अंक	<u>15</u>
	<u>25</u>

**Rationale:**

The primary aim of Business Communication (Sessional) is to help the students acquire skill of communication (either oral or written) for development of their personality and for a successful professional life.

The curriculum has therefore been so designed as to meet the above requirements by seeking to bring about an overall improvement in their way of presentation, both orally and in writing. It also seeks to develop the student's power of communication through effective use of worksheets and exercises.

**Objectives:**

The students will be able to:

- (1) Develop their personality traits.
- (2) Comprehend the conversation with people.
- (3) Develop & maintain good contacts with people.
- (4) Develop their skills of communication orally and in writing

**S.No.****Topic**

01. Practice on written Communication.
  - (a) Letter Writing
  - (b) Report writing
  - (c) Precis/ Summary writing
  - (d) Drafting advertisements
  - (e) Drafting Fax messages/ Telegrams
02. Writing effective Bio-data/ Curriculum Vitae
03. Exercises in Oral Communication
  - (a) Debates, Elocution, speeches, mock interviews

<b>Contents (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>PRACTICE ON WRITTEN COMMUNICATION:</u></b> 01.01 Drafting letters: Official, Business, D.O, (a) Format (b) Content (c) Style/language 01.02 Report Writing: types (a) General/Informative (b) Technical (c) Enquiry Report (d) Report of complaint 01.03 Precis/ Summary Writing: (a) Reading & Understanding (b) Selection of important points (c) Writing down points in own words (d) To stay within limits prescribed 01.04 Drafting advertisements: (a) Format (b) Style of presentation (c) Brevity of words used 01.05 Drafting Telegrams/ Faxograms (a) Make text concise & precise (b) Arrange words appropriately		

<b>Unit-2</b>	<p><b><u>WRITING EFFECTIVE BIO- DATA/ CURRICULUM VITAE:</u></b></p> <p>02.01 Contents of Bio-data</p> <p>02.01.01 Personal Information</p> <p>(a) Name</p> <p>(b) Age</p> <p>(c) Marital Status</p> <p>(d) Address (with telephone no. etc.)</p> <p>02.01.02 Educational background</p> <p>02.01.03 Academic honors, if any</p> <p>02.01.04 Employment history</p> <p>02.01.05 Extra- curricular Activities:</p> <p>- Personal achievement</p> <p>- Hobbies &amp; Interests</p> <p>02.01.06 Career goals &amp; job objectives</p> <p>02.01.07 Preparations made towards attainment of career goal through training/courses taken, articles/papers published etc.</p> <p><b>Hints:</b></p> <p>(a) Remember that the Bio-data serves as a personal advertisement of the job seeker and must therefore appear interesting, attractive, brief and informative.</p> <p>(b) The Bio-Data may not include the following items unless specifically asked for by the employer:</p> <p>(i) Willingness to travel extensively</p> <p>(ii) Statement of health</p> <p>(iii) Reasons for leaving past job</p> <p>(iv) Names and addresses of referees</p> <p>(c) The Bio-data is the first contact between the candidate and the interview board. It serves as a starting point of the interview. Hence the information given in the Bio-data should be brief, to the point and effective enough to catch the attention of the interviewer.</p>		
<b>Unit-3</b>	<p><b><u>EXERCISES IN ORAL COMMUNICATION:</u></b></p> <p>04.01 Essentials of debating, elocution, extempore speech.</p> <p>04.01.01 Taming fears</p> <p>04.01.02 Preparation of text/ subject matter</p> <p>04.02.01 Conversational- logical flow</p> <p>04.02.02 Adequate information, examples</p> <p>04.03 Presentation</p> <p>04.03.01 Language, style, pronunciation, fluency</p> <p>04.03.02 Manners, gestures, posture, expressions</p> <p>04.03.03 Establishing eye contact with audience – every section of audience to again confidence, control.</p> <p>04.03.04 Image projection – appear confident, calm and composed- professional image, garments, accessories, shoes, face, hands, hair.</p> <p>04.04 Vocal skills</p> <p>04.04.01 Listening effectively</p> <p>04.04.02 Projection of voice appropriately (up or down)</p> <p>04.04.03 Varying voice &amp; pace of speech</p> <p>04.04.04 Varying vocal pitch and inflection</p> <p>04.04.05 Enunciation</p>		

## IN OFFICE TRAINING AND VISIT TO ORGANIZATION

<b>Subject Code 1626509</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits 2</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>30</b>	
	—	—	<b>4 Week Continues</b>	<b>External Examiner</b>	<b>:</b>	<b>70</b>	

### 1. In Office Visit: -

It is very important for the student of M.O.P. to visit the office of Secretariat, Different offices in District and Muffasil, any big organization – such as Bank, L.I.C., S.S.C. Industrial Estate etc.

<b>Contents (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	COMFED (Sudha Dairy Project)		
<b>Unit-2</b>	Patna Museum		
<b>Unit-3</b>	Darbhanga Museum		
<b>Unit-4</b>	BIHAR STATE ELECTRICITY BOARD, PATNA		
<b>Unit-5</b>	Hazipur Industrial Estate		
<b>Unit-6</b>	Muzaffarpur Industrial Estate		
<b>Unit-7</b>	Bank (Govt & Private Sector)		
<b>Unit-8</b>	STATE BOARD OF TECHNICAL EDUCATION (SBTE)		
<b>Unit-9</b>	Govt Polytechnic Institution.		
<b>Unit-10</b>	PATNA SECRETERIATE.		
<b>Unit-11</b>	Bhagalpur Silk Industrial		
<b>Unit-12</b>	Dying and Finishing Plant-Darbhanga		
<b>Unit-13</b>	Oil Refinery, Barauni		
<b>Unit-14</b>	Thermal Power Station, Barauni.		
<b>Unit-15</b>	Thermal Power Station, Kanti, Muzaffarpur		

**STATE BOARD OF TECHNICAL EDUCATION, BIHAR**  
**Scheme of Teaching and Examinations for**  
**V SEMESTER DIPLOMA IN COSTUME DESIGN & GARMENT TECHNOLOGY**  
**(Effective from Session 2016-17 Batch)**

**THEORY**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Advance Pattern Making	1642501	04	03	10	20	70	100	28	40	04
2.	Fashion Accessories	1642502	03	03	10	20	70	100	28	40	02
3.	Apparel Quality Control	1642503	03	03	10	20	70	100	28	40	03
4.	Embroidery Technology	1642504	03	03	10	20	70	100	28	40	03
5.	Advanced Apparel Production Technology	1642505	04	03	10	20	70	100	28	40	03
<b>Total:- 17</b>							<b>350</b>	<b>500</b>			

**PRACTICAL**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Advance Pattern Making Lab.	1642506	06	03	15	35	50	20	03
7.	Embroidery Technology Lab.	1642507	04	03	15	35	50	20	01
8.	Needle Craft Lab.	1642508	06	03	15	35	50	20	02
<b>Total:- 16</b>							<b>150</b>		

**TERM WORK**

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject	
9.	In Plant Training & Visit to Work	1642509	4 weeks continuous	30	70	100	40	03
<b>Total:-</b>						<b>100</b>		
Total Periods per week Each of duration one Hours = 33						<b>Total Marks = 750</b>	<b>24</b>	



## ADVANCE PATTERN MAKING

<b>Subject Code</b> <b>1642501</b>	<b>Theory</b>			<b>No of Period in one session : 50</b>			<b>Credits</b>  <b>04</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>100</b>	
	<b>04</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>70</b>	
				<b>CT</b>	<b>:</b>	<b>10</b>	

**RATIONALE:** This course imparts the knowledge of advanced pattern designing using flat pattern technique and draping technique. This course also imparts the skill in advanced pattern making of upper and lower garments using flat pattern technique. It is useful for the students for advanced pattern design and fashion designing. This knowledge is useful for preparing fashioned garments at par with the industry and advanced pattern designing of complex garments such as contour fit using flat pattern technique. It will also be useful for the students to design haute couture and preparing fashioned garments at par with the needs of the industry. Thus it is a key course for costume designers and hence students should develop mastery over it.

**Objectives:** Students will be able to:

1. Prepare dress and trouser blocks.
2. Prepare appropriate patterns to design fashioned garments.
3. Draft and grade lower block for men and women as per requirement.
4. Develop contoured garments of various types for different applications.

UNIT	CONTENTS (Theory)	Hrs/ Week	Marks
UNIT-1	<b>Techniques of Drafting of Children Block.</b> 1.1 Drafting of children block for boy (8- 10 years). 1.1.1 Development of basic children Shirt from bodice block and its variations. 1.2 Drafting of children block for girl (6- 8 years). 1.2.1 Girl's block variation Dress/frock etc.	06	09
UNIT-2	<b>Techniques of Drafting of Men's Shirts.</b> 2.1 Drafting of Men's Shirt and its variations. 2.1.1 Drafting of formal shirt. 2.1.2 Drafting of casual shirt.	04	05
UNIT-3	<b>Techniques of Draping of Torso Block.</b> 3.1 Development of torso/dress block by draping method. 3.1.1 Development of Shift (semi fit) and box fit (loose fit) from sheath fit(close fit) torso by using flat pattern making technique and development of their slopers for design adaptation.	05	06
UNIT-4	<b>Adaptation of Indian Kurta from Torso Block.</b> 4.1 Adaptation of dress blocks into <i>Indian Kurta</i> , princess line <i>kurta</i> etc. In different fits (fitted, semi fitted and loose fit).	02	04
UNIT-5	<b>Techniques of drafting of Men's trouser block</b> 5.1 Drafting of trouser block for men & its test fit.	02	04
UNIT-6	<b>Techniques of drafting of Women's trouser block</b> 6.1 Drafting of trouser & skirt block for women & its test fit.	02	04
UNIT-7	<b>Adaptation of trouser block (male/female) in variations</b> 7.1 Adaptation of Trouser block (male/ female) to its variations: Flared trouser, Short, Capri, A-line, Umbrella, Pegged top.	06	08
UNIT-8	<b>Techniques of drafting of Salwar &amp; Churidar</b> 8.1 Drafting of Indian bifurcated garment for women & its test fit. 8.1.1 Salwar & Churidar and its variations as per trend.	05	06
UNIT-9	<b>Manual grading</b> 9.1 Introduction to manual grading- grading concepts, principles of grading, terminology, zero point, type of grading methods. 9.1.1 Grading of single dart basic bodice block by nest method (two size up - one size down). 9.1.2 Grading of Basic skirt block by nest method (two size up - one size down). 9.1.3 Grading of men's trouser by nest method (two size up - one size down).	06	08
UNIT-10	<b>Contour Fit Blocks</b> 10.1 Development of Contour fit block from bodice block. 10.2 Contour fit variations – corset, halter, empire line, evening gown / dress etc. 10.3 Development of Sleeve for contour fit block. 10.4 Design and construct contour fit garment.	06	08
UNIT-11	<b>Sari blouses</b> 11.1 Designing of Choli blouse/ princess line/ blouse variation as per current trend. 11.2 Drafting of 3 dart blouse by drafting method and its test fit. 11.3 Construct Choli blouse/ princess line/ blouse variation as per current trend and its test fit.	06	08
<b>Total</b>		<b>50</b>	<b>70</b>

**List of Recommended Books**

<b>S. No.</b>	<b>Title of Books</b>	<b>Author</b>	<b>Publication</b>
1	Pattern making for Fashion design	Armstrong, Helen Joseph	Prentice Hall
2	The Art of Fashion Draping	Connie Amaden-Crford	Fair Child Books
3	Pattern Cutting and Making up	Martin M Shoben & Janet P. Ward	Routledge
4	Metric Pattern Cutting for Children's Wear	Winifred Aldrich	Blackwell Science
5	Metric Pattern Cutting for Children's Wear and baby wear	Winifred Aldrich	Wiley-Blackwell
6	Pattern Design for Children's clothes	Gloria Mortimer-Dunn	B T Batsford, London
7	Childrenswear Design	Hilde Jafee, Rosa Rosa	Fair Child Books
8	Metric Pattern Cutting for men's wear	Winifred Aldrich	Wiley-Blackwell
9	Shirt Making	David Page Coffin	
10	The practical guide to patternmaking for fashion designers	Lori A. Knowles	Fair Child Books
11	Pattern Grading for Women's Clothes	Gerry Cooklin	Wiley
12	Grading Techniques for Modern Design	Jeanne Price & Brenard Zamkoff	Fairchild Publications
13	Fabric, Form and Flat pattern Cutting	Aldrich Winifred	Blackwell Publication
14	Pattern Cutting and Making up	Martin Shoben and Janet Ward	Butter Worth
15	More Dress Pattern Designing	Aldrich Winifred	Blackwell Science

# FASHION ACCESSORIES

<b>Subject Code</b> <b>1642502</b>	<b>Theory</b>			<b>No of Period in one session : 42</b>			<b>Credits</b>  <b>02</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	<b>—</b>	<b>—</b>	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:** This course will enable students to know about various fashion accessories which are used to complement fashion. Accessories help in highlighting a dress or apparel.

**Objectives:** Students will be able to:

1. To understand value addition to costumes by innovative use.
2. To understand techniques such as Embellishments, Sequins & other forms.

UNIT	CONTENTS (Theory)	Hrs/ Week	Marks
<b>Unit-1</b>	<b>Introduction</b> 1.1 <b>Fashion accessories:</b> Definition, History, Classification, Present trends in fashion accessories and its importance and uses. 1.2 <b>Accessory types:</b> Head gears, Footwear, neck wear and belts, Hand bags, gloves and Mitts, Scarves, shawls, stoles stacking, Sun glasses.	06	05
<b>Unit-2</b>	<b>Handbags and Shoes</b> 2.1 <b>Handbags:</b> Introduction and history, Importance in the fashion, Industry and sourcing of material and trims, Materials used for handbags, Design of different styles of handbags, Construction details of handbags, Care and maintenance, Uses with style. 2.2 <b>Shoes:</b> Introduction and history, Industry and sourcing of material and trims, Materials used for Shoes, Design of different styles of Shoes, Construction details of Shoes, Care and maintenance, Uses with style. 2.3 Marketing position of handbag and shoes.	08	15
<b>Unit-3</b>	<b>Gloves and Belts</b> 3.1 <b>Gloves:</b> Introduction, Importance in the fashion, Industry and sourcing of material and trims, Materials used for Gloves, Design of different styles of Gloves, Construction details of Gloves, Care and maintenance, Uses with style. 3.2 <b>Belts:</b> Introduction, Industry and sourcing of material and trims, Materials used for Belts, Design of different styles of Belts, Construction details of Belts, Care and maintenance, Uses with style. 3.3 Marketing position of Gloves and Belts.	08	15
<b>Unit-4</b>	<b>Hats and Neckwear</b> 4.1 History, Industry and Sourcing, Material and trims sourcing 4.2 Materials used for Hats and Neckwear Design of different styles of Hats and Neckwear, Construction details of Hats and Neckwear 4.3 Marketing position of Gloves and Belts: Product promotion of Gloves, Product promotion of Belts 4.4 Care measure taken for maintenance: Care and maintenance	08	15
<b>Unit-5</b>	<b>Costume Jewellery</b> 5.1 History, Industry and Sourcing, Material and trims sourcing, Materials used for jewellery, Design of different styles of jewellery, Construction details of jewellery. 5.2 Marketing position of Jewellery: Product promotion of Jewellery 5.3 Care measure taken for maintenance: Care and maintenance	06	10
<b>Unit-6</b>	<b>Scarves and Stole</b> 6.1 History, Industry and Sourcing, Material and trims sourcing, Materials used for Scarves and Stole, Design of different styles of Scarves and Stole, Construction details of Scarves and Stole 6.2 Marketing & product position of Scarves and Stole. 6.3 Care measure taken for maintenance: Care and maintenance	06	10
<b>Total</b>		<b>42</b>	<b>70</b>

### List of Recommended Books

Sr. No.	Title	Author	Publisher
1.	Simple Accessories	Jeff Sone & Johnson Gros	--
2.	Fashion From Concept to Consumer	Gini Stephens Frings	Pearson publications, 2009
3.	The complete 20th Century Source Book	John Peacock	Thames and Hudson, London, 2000,
4.	Fashion Accessories- Men	John Peacock	Thames and Hudson, London, 1996
5.	Century of Bags	Claire Billcocks	Chartwell Books, New Jersey 1997
6.	Shoes -Fashion and Fantasies	Malolow Blahnik- Co Collin Mac dolw	Thames and Hudson, 1989

# APPAREL QUALITY CONTROL

<b>Subject Code</b> <b>1642503</b>	<b>Theory</b>			<b>No of Period in one session : 42</b>			<b>Credits</b>  <b>03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	—	—	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**Rationale:** The need for quality products by customers is increasing day by day and garment industry is no different. This course tries to develop requisite competency and skills in by diploma holders to carry out inspection at various stages of garment construction viz. pre-production inspection of fabric, in work inspection etc. Thus after learning this course diploma holders would be able to ensure that quality is maintained during production and general quality checks that are essential before transit are carried out.

**Objectives:** Students will be able to:

- i. Employ inspection and quality checks on apparel to ensure quality product.
- ii. Select appropriate standard and specification for dress making
- iii. Apply requisite test for ensuring fabric quality
- iv. Measure garments Shirt, Trouser, T-Shirt, and Jeans, flow charts
- v. Identify finishing defects

UNIT	CONTENTS (Theory)	Hrs/ Week	Marks
<b>UNIT-1</b>	<b>Introduction to quality</b> 1.1 Definition, Related terms. 1.2 ISO, Quality Assurance, Quality Control, Quality Management.	03	05
<b>UNIT-2</b>	<b>Standards and specifications</b> <b>2.1 Standards</b> 2.1.1 Type: National and International standards(AATCC, ASTM, ANSI, ISO, BSI, BIS) 2.1.2 Importance 2.1.3 Difference between various standards 2.1.4 Grade definition <b>2.2 Specification</b> 2.2.1 Need and Importance 2.2.2 Types 2.2.3 Process of development 2.2.4 Tolerances, limits.	05	05
<b>UNIT-3</b>	<b>Fabric Quality</b> 3.1 Fabric Inspection and grading 3.2 Fabric defects 3.3 Inspection machines/Equipment's 3.4 Grading of fabric 3.5 4 point and 10 point system	03	05
<b>UNIT-4</b>	<b>Fabric Testing</b> 4.1 Standard used 4.2 Equipment used 4.3 Types of Test: Physical Tests and Colour fastness tests.	03	05
<b>UNIT-5</b>	<b>Role of Quality in Cutting and Fusing</b> 5.1 Quality parameters: Marker making, Spreading, Cutting, Bundling, Ticketing, Fusing. 5.2 Quality problems due to fusing.	03	05
<b>Unit-6</b>	<b>Cutting Room Equipment</b> 6.1 Straight Knife Cutter, Round Knife Cutter, Bend Knife Machine. 6.2 Die Cutter. 6.3 Notcher, Drill Machine.	03	05
<b>Unit-7</b>	<b>Computerized Cutting Room Equipment</b> 7.1 Automatic Cutter – single ply and multiply, Automatic Spreader, Laser Cutter, Ultrasonic Cutter, Water jet Cutter 7.2 Steam press with steam table and boiler (different types of bugs, Non Return Valve, steam trapper, cladding, steam line etc.)	05	05
<b>Unit-8</b>	<b>Finishing Equipment</b> 8.1 Basic understanding of the following finishing room equipments: Foam finisher, Tunnel finisher, Steam Dolly, Carousel press, Topper & leggers.	03	05
<b>Unit-9</b>	<b>Devices</b> 9.1 Various types of attachments, folders, guides, pressure feet etc.	03	05
<b>Unit-10</b>	<b>Advance Machines</b> 10.1 Different Advance Machines.	02	05

<b>UNIT-11</b>	<b>Inspection Procedures in the Sewing room</b> 11.1 Object of Inspection. 11.2 Inspection Loop 11.3 Types of Inspections 11.4 Identification of various minor and major defects.	02	05
<b>UNIT-12</b>	<b>Garment Inspection Checkpoints</b> 12.1 Key Inline checkpoints for standards Garment Types	02	05
<b>UNIT-13</b>	<b>Garment Measuring</b> 13.1 Measure garments 13.2 Shirt, Trouser, T-Shirt, and Jeans, flow charts.	03	05
<b>UNIT-14</b>	<b>Quality in Finishing room</b> 14.1 Finishing Defects	02	05
<b>Total</b>		<b>42</b>	<b>70</b>

### List of Recommended Books

<b>Sr. No.</b>	<b>Title of Book</b>	<b>Author</b>	<b>Publication</b>
1.	Managing Quality in Apparel Industry	Mehta & Bharadwaj	NewAge Publisher, Delhi
2.	Handbook of Quality	Joseph Juran	Mc Graw Hill. ISBN 978-0-07-0162973-7
3.	Principles of Textile Testing	J.E. Booth	Published by CBS Publishers & Distributors Pvt. Ltd., 1996
4.	Evaluation of Apparel Quality Fairchild Textile & Clothing	Lehnert Gertrud	ASQC, Quality Press, USA. 1990

# EMBROIDERY TECHNOLOGY

<b>Subject Code</b> <b>1642504</b>	<b>Theory</b>			<b>No of Period in one session : 42</b>			<b>Credits</b>  <b>03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>03</b>	—	—	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**RATIONALE:** This course will provide basic knowledge of embroidery stitches, tools and equipments required for embroidery and about traditional embroidery of India. It is necessary to learn basic embroidery stitches for enhancing the beauty of garments. Numerous fabrics are required to be known to the students on which embroidery is done. Also the Indian state wise hand embroidery and modern machine embroidery. This course will provide base to make garments aesthetically beautiful.

**Objectives:** Students will be able to:

1. Select appropriate embroidery type for given garment design.
2. Prepare samples of traditional Indian embroidery.

UNIT	CONTENTS (Theory)	Hrs/ Week	Marks
<b>Unit-1</b>	<b>Introduction to embroidery and tools and equipment required for hand embroidery.</b> 1.1 History and Origin of embroidery 1.2 Development of embroidery 1.3 Importance of embroidery and need of embroidery in garments (to increase beautification, to hide short lacking, to show tradition, to show different culture). 1.4 Uses of embroidery. 1.5 Selection, use and maintenance of tools and equipment for embroidery. 1.6 Various threads used in embroidery. 1.7 Accessories used in embroidery. 1.8 Various types of Needles and fabrics with its impact on quality parameters. 1.9 General rules for hand embroidery 1.10 Design transfer techniques 1.11 Selection of method of design transfer	08	14
<b>Unit-2</b>	<b>Different types of Basic Embroidery Stitches.</b> 2.1 Back stitch 2.2 Stem Stitch 2.3 Blanket stitch 2.4 Chain stitch 2.5 Laid and Couching /cording 2.6 Cross stitch 2.7 Feather stitch / Fly stitch 2.8 Satin stitch 2.9 Lazy –daisy stitch 2.10 Bullion and French knot 2.11 Long and short stitch 2.12 Herring bone	06	12
<b>Unit-3</b>	<b>Different types of Indian Embroideries.</b> 3.1 Kashmiri Kashida/Kashmiri Embroidery. 3.2 Bagh and Phulkari of Punjab. 3.3 Chamba Rumals of Himachal. 3.4 Kashida, Sujani and appliqué of Bihar. 3.5 Bengal Kantha embroidery 3.6 Murshidabad and Dacca embroidery. 3.7 Manipuri embroidery. 3.8 Rajasthan embroidery. 3.9 Kasuti of Maharashtra and Mysore. 3.10 Chikankari of Luchnow, Uttar Pradesh. 3.11 Kutch and Kathiawar embroidery of Gujarat. 3.12 Gold and silver embroidery (zardosi).	12	20
<b>Unit-4</b>	<b>Product Development</b> 4.1 Designing of Product with Application of Any One Traditional Embroidery	04	06
<b>Unit-5</b>	<b>Ornamental Techniques</b> 5.1 Eyelet work, Lace work, Cut work, Patch work, Bead work, Sequins work.	04	06
<b>Unit-6</b>	<b>Machine Embroidery</b> 6.1 Introduction to various types of embroidery machines and their application. 6.2 Study of difference between hand embroidery and machine embroidery. 6.3 Embroidery related to all fashion elements.	08	12

	6.4 Introduction to various types of embroidery software. 6.5 Design in computerized embroidery machines: Study of tools in embroidery software for designing.		
	<b>Total</b>	<b>42</b>	<b>70</b>

### List of Recommended Books

Sr. No.	Title of Book	Author	Publication
1	Traditional Embroideries of India	Dr. Shailaja D. Naik	A.P.H. Publishing Corporation, New Delhi , 1996
2	Crafts of Gujarat Embroidery Ornaments.	Jaya Jaitly	
3	Textiles and embroidery of India	Kamladevi Chattopadhyay & Jasleen Dhamecha	Mark Publications, 34-38Bank street, Bombay, India.
4	Indian Embroidery	Savitri Pandit	
5	A stitch in Gujarat embroidery	----	The Gujarat state Handicraft &Handloom Development Corporation Ltd.
6	Bhartiya Kashidakari	Dr. Amita Patel &Anita Patel	Avichl Science Foundation, V.V. Nagar
7	Complete guide to needlework	----	Reader digest publication,
8	Ethnic Embroidery of India	Usha Shrikant	Honesty Publisher & Distributors
9	The coats book of Embroidery	Mary Gostelow	David & Charles Newton, Abbot London Vancouver
10	Embroidered Textiles	Shaila Paine,	Thames & Hudson Ltd, Delhi. 1990
11	Inspirational Ideas for embroideries of India	Gail Lawther	Search Press Ltd Delhi.1992
12	Encyclopedia of needle work		Fashion Book Company of India

# ADVANCED APPAREL PRODUCTION TECHNOLOGY

<b>Subject Code</b> <b>1642505</b>	<b>Theory</b>			<b>No of Period in one session : 42</b>			<b>Credits</b>  <b>03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>70</b>	
	<b>04</b>	—	—	<b>TA</b>	<b>:</b>	<b>10</b>	
				<b>CT</b>	<b>:</b>	<b>20</b>	

**RATIONALE:** This course gives an awareness of technologies and processes being used in different departments of the apparel production industry. It intends to enable students capable to choose appropriate technology for apparel production and plan production schedule based on knowledge of production capacities of different production machines and time required in different processes.

**Objectives:** Students will be able to:

- i. Plan the processes associated with stores, cutting department, sewing department and finishing department for quality apparel production.
- ii. Manage the ware house
- iii. Describe different steps in cutting department processes for quality cutting
- iv. Explain different steps in sewing department processes for quality sewing
- v. Describe the different steps in finishing department processes for quality finishing

UNIT	CONTENTS (Theory)	Hrs/ Week	Marks
<b>UNIT-1</b>	<b>Warehouse management</b> 1.1 Store management system (LIFO , FIFO, Delivery Chalan, Stock management) 1.2 Store report generation 1.3 Report format example	06	10
<b>UNIT-2</b>	<b>Cutting department process</b> 2.1 Marker planning 2.2 Marker making – shirt/ trouser/ t-shirt by miniature or full size patterns for woven and knit (open and tubular) fabric 2.3 Marker making - Check and plaid fabric 2.4 Various ways of marker and their relation with fabric design and weave 2.5 Single pattern double ply marker 2.6 Marker efficiency calculation 2.7 Cut order planning 2.8 Fabric reconciliation report 2.9 Effect of width variation on spreading & cutting 2.10 Effect of fabric shrinkage on spreading & cutting 2.11 Dealing with fabric problems - bowing, skewing& fabric defects 2.12 Different types of spreading 2.13 Introduction to interlining and its checking parameters	18	28
<b>UNIT-3</b>	<b>Sewing department process</b> 3.1 Operation breakdown and line balancing 3.2 WIP management 3.3 Line loading based on type of production system 3.4 Preparation for next lot of sewing 3.5 Preparation for introducing new style 3.6 Parameters of line (quality, response time, WIP, throughput, line supervision, crisis management) 3.7 Production reports 3.8 Under pressing 3.9 Setting up of inspection points 3.10 Trims planning	12	22
<b>UNIT-4</b>	<b>Finishing department process</b> 4.1. Ironing, pressing, tagging, folding of shirt, trouser, t-shirt, undergarment 4.2. Various packing ratio and packing methods 4.3. Carton marking 4.4. Quality check and analysis 4.5. Reports on quality 4.6. Report on cut to pack ratio	06	10
<b>Total</b>		<b>42</b>	<b>70</b>

### List of Recommended Books

Sr. No.	Title of Book	Author	Publication
1.	Technology of clothing Manufacturers	Harold Carr & Barbera Latham	Blackwell Science
2.	Apparel Manufacturing Analysis	Jacob Solinger	Bobbin Media Corporation, 1988



## ADVANCE PATTERN MAKING LAB

<b>Subject Code 1642506</b>	<b>Practical</b>			<b>No of Period in one session : 75</b>			<b>Credits  03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
			<b>External</b>	<b>:</b>	<b>35</b>		

Unit	CONTENTS (Practical)	Hrs/ Week	Marks
<b>Unit-1</b>	Prepare a upper body block for child ( boy, 8-10 years) by drafting method and its test fit	03	
	Create a basic shirt by adaptation of upper body block	02	
	Prepare a upper body block for child ( Girl 6-8 years) by drafting method and its test fit	03	
	Create a dress/ frock by adaptation of upper body block	02	
<b>Unit-2</b>	Prepare a draft of men's formal shirt and its test fit	03	
	Prepare a draft of men's casual shirt and its test fit	03	
<b>Unit-3</b>	Prepare a torso block (sheath) by draping method	03	
	Prepare a shift and box fit block from torso (sheath) block and its test fit	03	
	Prepare slopers for all three torso block (sheath, shift & box)	03	
<b>Unit -4</b>	Adapt torso block to create a Indian Kurta, princes line kurta etc. in different fits (fitted, semi fitted or loose fit) and its test fit	04	
<b>Unit -5</b>	Prepare trouser block for men by drafting method & carry out its test fit	03	
<b>Unit -6</b>	Prepare trouser block for women by drafting method & carry out its test fit	03	
<b>Unit -7</b>	Adapt trouser block for its variations- flared trouser, pleated trouser, short, Bermuda, Capri etc.	05	
<b>Unit -8</b>	Prepare draft of Salwar & Churidar and its variations as per trend	04	
<b>Unit -9</b>	i. Grade single dart basic bodice block by nest method( two size up - one size down) ii. Grade Basic skirt block by nest method (two size up - one size down) iii. Grade men's formal/ casual shirt by nest method (two size up - one size down) iv. Grade men's trouser by nest method (two size up - one size down)	09	
<b>Unit -10</b>	Prepare Contour fit block from bodice block	01	
	Prepare Contour fit sleeve block	01	
	Prepare Contour fit variation of bodice block	01	
	Prepare Contour fit variation of sleeve block	01	
	Design corsets.	01	
	Design halter neck garment.	01	
	Designing of empire line garment.	01	
	Designing of evening gown / dress.	01	
	Construct any one contour garment from the above variation.	04	
<b>Unit -11</b>	Construct 3 dart blouses by drafting method for test fit.	02	
	Design designer blouses with princess line.	01	
	Design designer blouses with halter neck.	01	
	Design designer blouses with strapless.	01	
	Designing of designer blouses with choli style.	01	
	Construct any one Choli-blouse/ princess line/ blouse variation as per current trend and its test fit. (prepare any one garment from the above variation)	04	
<b>Total</b>		<b>75</b>	

## EMBROIDERY TECHNOLOGY LAB

<b>Subject Code 1642507</b>	<b>Practical</b>			<b>No. of Period in one session : 50</b>			<b>Credits  01</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>04</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

UNIT	CONTENTS (Practical)	Hrs/ Week	Marks
<b>Unit-1</b>	Prepare samples of following Indian embroidery on 8”/8” fabric. The size of the design should be 4”/4”. Study of historical background motifs, colours & materials used. Also prepare a report indicating fabric used, type and size of needle, type of thread and amount of all the material consumed.  1.1 Kashmiri 1.2 Phulkari 1.3 Chamba 1.4 Chikankari 1.5 Kantha 1.6 Manipuri 1.7 Kutch 1.8 Kathiawari 1.9 Kasuti (Dharwadi) 1.10 Applique Patch work	18	
<b>Unit-2</b>	Study of ornamental Techniques- Eyelet work, Lace work, Cutwork, Patchwork, Bead work, Sequins work.	10	
<b>Unit-3</b>	Study of design transfer techniques.	03	
<b>Unit-4</b>	Study of computerized embroidery machines threads, needles, frames and fabric for embroidery.	03	
<b>Unit-5</b>	Develop the design in computerized embroidery machines-alphabetical design.	03	
<b>Unit-6</b>	Develop the design in computerized embroidery machines-creative design.	03	
<b>Unit-7</b>	Collect the samples and images on each type of embroidery and make a scrap book.	04	
<b>Unit-8</b>	Design a product with any one Traditional Embroidery	06	
	<b>Total</b>	<b>50</b>	

## NEEDLE CRAFT LAB

<b>Subject Code</b> <b>1642508</b>	<b>Practical</b>			<b>No of Period in one session : 56</b>			<b>Credits</b>  <b>02</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>ESE</b>	<b>:</b>	<b>50</b>	
	—	—	<b>06</b>	<b>Internal</b>	<b>:</b>	<b>15</b>	
				<b>External</b>	<b>:</b>	<b>35</b>	

**RATIONALE:** This course helps in development of skills related to application of appropriate needlework technique and traditional stitch technique as per the requirement of the garment design. It is useful for the students for embellishing the fabric in garment industry. This knowledge is useful for preparing fashioned garments.

**Objectives:** Students will be able to:

- i. Prepare the samples using appropriate type of basic stitch technique.

UNIT	CONTENTS (Practical)	Hrs/ Week	Marks
<b>Unit-1</b>	Create five motifs and repeats patterns for field & borders, make Khakha of these patterns Create a sample of net Embroidery Create a sample of Draw Thread Work with various techniques Create a sample of Faggoting with various Techniques	16	
<b>Unit-2</b>	i. Create a Sample of Ribbon work of 8"x8" ii. Create a Sample of Computerized Embroidery iii. Create a Sample of Ari work of 8"x8" iv. Create a Sample of Bead Work 4"x4" v. Create five samples on Explorations of stitches learned in Indian embroidery with material explorations (fabrics, threads, beads, sequins, mirrors, needles)	16	
<b>Unit-3</b>	Prepare following sample of crochet (4"/4" size). i. Circle ii. Triangle iii. Square iv. Decorative (Flower/ leaf/ button/spring)	12	
<b>Unit-4</b>	i. Latch Rug Making	06	
<b>Unit-5</b>	Prepare the following (Any One) ii. Crochet lace.(Size 6") iii Rug Samples	06	
	<b>Total</b>	<b>56</b>	

## INPLANT TRAINING & VISIT TO WORK

<b>Subject Code 1642509</b>	<b>Term Work</b>			<b>No of Period in one session :</b>			<b>Credits  03</b>
	<b>No. of Periods Per Week</b>			<b>Full Marks</b>			
	<b>L</b>	<b>T</b>	<b>P/S</b>	<b>Internal Examiner</b>	<b>:</b>	<b>30</b>	
	—	—	<b>4 Weeks continuous</b>	<b>External Examiner</b>	<b>:</b>	<b>70</b>	

**Rationale:** In-Plant training will provide an industrial exposure to the students as well as to develop their career in the high-tech industrial requirements. It will enrich the practical knowledge of the students.

**Objectives:** Students will be able to:

01. To achieve a practical knowledge for promotion of some students to imbibe self confidence. Stress has been given to develop the skill.
02. To gain the knowledge about recent or latest manufacturing principles.
03. To achieve knowledge of recent problems and its remedies.

<b>CONTENTS (Term Work)</b>		<b>Hrs/week</b>	<b>Marks</b>
<b>Unit-1</b>	<b><u>FIRST WEEK</u></b>		
	- Visit to garment manufacturing industry.		
	- Study of the organization with organise of cloth or used clothes like garment.		
	- Garment tools & methods of its use.		
<b>Unit-2</b>	<b><u>SECOND WEEK</u></b>		
	- Layout of the plant		
	- Study of the process and preparation of flow chart.		
<b>Unit-3</b>	<b><u>THIRD WEEK</u></b>		
	- Make the list of Machines		
	- Name of manufacturers of the equipment		
<b>Unit-4</b>	<b><u>FOURTH WEEK</u></b>		
	- Preparation cost, Running cost & Standard cost.		