

CURRICULUM  
OF  
Artificial Intelligence  
(Level- 3)



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## INTRODUCTION

Since the invention of computers and machines, their capability to perform various tasks went on growing exponentially. Humans have developed the power of computer systems in terms of their diverse working domains, their increasing speed, and reducing size with respect to time. A branch of Computer Science named Artificial Intelligence (AI) pursues creating the computers or machines as intelligent as human beings.

Artificial Intelligence is a method of making a computer, a computer-controlled robot, or a software think intelligently like the human mind. AI is accomplished by studying the patterns of the human brain and by analyzing the cognitive process. The outcome of these studies develops intelligent software and systems.

John McCarthy defines artificial intelligence as, it is “The science and engineering of making intelligent machines, especially intelligent computer programs”. Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans thinks. AI is accomplished by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems.

Artificial intelligence has become a powerful driving force in a wide range of industries, helping people and businesses create exciting, innovative products and services, enable more informed business decisions, and achieve key performance objectives.

The measurable objectives of this document are to develop Competency Standards (CS) in the area of AI. These CS are designed as a comprehensive training program to the study of AI for both male and female trainees at Diploma /DAE (Level-5). This training program covers basics of the subjects like introduction to AI, its principles & constituents, and its applications in a wide range of organizations etc.; entrepreneurship skills; the economic and managerial aspects of Artificial Intelligence, the historical and modern insights into the IT industry; the marketing, organizational and technological issues involved. It involves the management of multiple activities such as studying the computer intelligence, machines and relevant software. It also involves marketing efforts to attract the intelligence sharing in both entrepreneurial and industrial sectors. AI has a wide range of applications in today’s society, its salient feature is that it can solve complex problems with an effective manner in a number of industrial sectors. Fig. 1 shows some of the industrial sectors where AI can be applied.



**Figure. 1 Some Applications of Artificial Intelligence**

For example, in order to start learning the AI concept for E-commerce, Finance, one need to understand the fundamentals of quantitative analysis which includes data processing, portfolio management, trading signal generation, high-frequency trading, etc. For the algorithm development of AI based applications, a language called Python is highly recommended for the code development.

## **PURPOSE OF THE TRAINING PROGRAM**

The purpose of this qualification is to give understanding of artificial intelligence in IT sector according to the high-tech industrial trends. Artificial intelligence is a transformative technology, generally refers to the ability of digital computing devices that can imitate a wide variety of human tasks with high intellectual accuracy. Trainees will be able to be introduced with the historically significant AI systems and their underlying AI concepts. They will explore different classical and modern AI techniques, and understand the three essential ingredients that drive modern AI – machine learning, data science, big-data and algorithms using modern scientific AI techniques. Trainees will also examine the ethical and social aspects of AI technologies as well as the exciting future trends such as:

- Explain the core elements and the historical development of artificial intelligence in modern era
- Give an account of essential artificial intelligence trends
- Demonstrate an understanding of different ways to maintain artificial intelligence sharing
- Understand how products are marketed both historically and currently
- Discuss central challenges in artificial intelligence field today, such as that of the impacts of sharing ideas/intelligence images and corporate social responsibility practices for implementation
- Core challenges in artificial intelligence field today, such as the human, economic and environmental both at national and international levels.

## **OVERALL OBJECTIVES OF TRAINING PROGRAM**

The objective of the course is to present component about the concepts and principles that underlie modern AI algorithms, and a practice component to relate theoretical principles with practical implementation. Develop a basic understanding of the building blocks of AI for data science and robotics with python. Students will implement an AI with different project in industrial perspective

In particular, this course will teach you about:

- Fundamentals of python programming for artificial intelligence
- Mathematics for artificial intelligence

- Introduction to artificial intelligence with robotics- mechanism, electronics, control boards, 3d modelling, object recognition with robotic arm structure, IoT based home automation

## COMPETENCIES TO BE GAINED AFTER COMPLETION OF COURSE

Competency covers during this course are the following e concepts and principles that underlie modern AI algorithms, and a practice component to relate theoretical principles with practical implementation. Develop a basic understanding of the building blocks of AI for data science and robotics with python. Students will implement an AI with different project in industrial perspective. Students will able to gain the following competencies.

- Fundamentals and advanced python programming for artificial intelligence
- Mathematics for artificial intelligence
- Introduction to artificial intelligence with robotics- mechanism, electronics, control boards, 3D modelling, object recognition with robotic arm structure, IoT based home automation
- Introduction to artificial intelligence with data science- database system, data preprocessing, data handling, data exploration, forecasting for stock market and text analytics
- Machine learning- fundamentals of artificial intelligence, supervised, unsupervised and deep learning, feed forward, back propagation, k means and convolutional neural network
- Artificial intelligence project develop object detection system, character recognition system, fraud detection system, forecasting for stock market Chat bot, and self-driving vehicle

## JOB OPPORTUNITIES AVAILABLE IMMEDIATELY AND LATER IN THE FUTURE

After completing **LEVEL 3** students will be able to get the following jobs

- Intermediate Python Developer

## **TRAINEE ENTRY LEVEL**

An interested individual with Matric science or equivalent, preferably F.Sc or equivalent, with comfort level of English language and mathematics. Satisfactory completion of level 2 is appropriate for an admission assessment test may also be applicable.

## **MINIMUM QUALIFICATION OF TRAINER**

Teaching staff should have B.CS (4 yrs)/B.SC Engineering (C.S)/ Software Engineering /DAE (AI Technology)/ Bachelor's degree (B Tech)/AI Technologist / professional experience in AI based industrial projects with at least 2-5 years working experience in relevant field.

## **RECOMMENDED TRAINER: TRAINEE RATIO**

The recommended trainer and trainee ratio is 1:24 per class

## **MEDIUM OF INSTRUCTION**

Instructions must be in Urdu, English or Local Language. Most of the language, code and terminology will be in English. As a result, trainees must be able to read and write in English in order to successfully complete the course.

## **DURATION OF COURSE (TOTAL TIME, THEORY AND PRACTICAL)**

## **OVERVIEW OF THE CURRICULUM**

This curriculum is for the course of Artificial intelligence comprises of 17 (Seventeen) modules. The recommended delivery time is 600 hours for the entire course. Delivery of the course could therefore be full time, 5 days a week, for 3 Years or equivalent according to levels. Trainers are at liberty to develop other models of delivery, including part-time and/ or evening delivery. The full structure of the course is as follow

MODULE TITLE	LEARNING UNITS	THEORY DAYS/HOURS	WORKPLACE DAYS/HOURS	TIMEFRAME OF MODULES
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MODULE TITLE	LEARNING UNITS	THEORY DAYS/HOURS	WORKPLACE DAYS/HOURS	TIMEFRAME OF MODULES
Module 1: <b>0619I&amp;CT-28 Apply Mathematics-II (Probability &amp; Statistics)</b>	<b>LU-1.</b> Apply basics of Statistics <b>LU-2.</b> Measure the Central Tendency& Dispersion <b>LU-3.</b> Apply Probability in AI <b>LU-4.</b> Use Random variables in AI <b>LU-5.</b> Apply Discrete Probability Distribution <b>LU-6.</b> Apply Continuous probability distribution <b>LU-7.</b> Apply Regression and correlation	<b>14 Hours</b>	<b>42 Hours</b>	<b>56 Hours</b>
Module 2: <b>0619I&amp;CT-45 Apply Object Oriented Programming</b>	<b>LU-1.</b> Create classes in Python <b>LU-2.</b> Create Methods in Python <b>LU-3.</b> Use of Inheritance in Python <b>LU-4.</b> Data Encapsulation in Python <b>LU-5.</b> Use Polymorphism in Python  <b>LU-6.</b>	<b>18 Hours</b>	<b>18 Hours</b>	<b>36 Hours</b>
Module 3: <b>0619I&amp;CT-21 Utilize Database System</b>	<b>LU-1.</b> Identify database systems <b>LU-2.</b> Setup MySQL with python <b>LU-3.</b> Introduce database system concept and architecture <b>LU-4.</b> Apply basic SQL <b>LU-5.</b> Perform data modeling using the Entity-Relationship (ER) model	<b>17 Hours</b>	<b>23 Hours</b>	<b>40 Hours</b>
Module 4: <b>0619I&amp;CT-33 Perform Data Preprocessing in Python</b>	<b>LU-1.</b> Apply Data Preprocessing <b>LU-2.</b> Perform Rescaling of Data <b>LU-3.</b> Binaries the Data	<b>24 Hours</b>	<b>24 Hours</b>	<b>48 Hours</b>

MODULE TITLE	LEARNING UNITS	THEORY DAYS/HOURS	WORKPLACE DAYS/HOURS	TIMEFRAME OF MODULES
	LU-4. Standardize Data			
Module 5: <b>0619I&amp;CT-34 Perform Data Handling in Python</b>	LU-1. Perform Data Integration LU-2. Perform Data Cleaning LU-3. Perform Data Transformation LU-4. Perform Data Discretization LU-5. Perform Data Reduction	30 Hours	30 Hours	60 Hours

**Total Hours of Course**

## DETAIL OF CURRICULUM

### Module 1: **0619I&CT-28 APPLY Mathematics-II (Probability & Statistics) concepts**

**Objective:** After completing this module learner will be able to .....

**Duration:** 60 Hours

**Theory:** 36 Hours

**Practice:** 24 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place

<b>LU-1. Apply basics of Statistics</b>	<ul style="list-style-type: none"> <li>▪ Perform basic operations of Statistics</li> <li>▪ Apply Descriptive Statistics</li> <li>▪ Apply Inferential Statistics</li> <li>▪ Construct Frequency distribution</li> <li>▪ Construct Histogram</li> <li>▪ Plot frequency curves</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge &amp; Understanding</li> <li>▪ Of basic operations of Statistics</li> <li>▪ Understand Descriptive Statistics</li> <li>▪ Understand Inferential Statistics</li> <li>▪ Understand Frequency distribution</li> <li>▪ Understand Histogram</li> <li>▪ Understand frequency curves</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ The marks awarded for an assignment set for a Year 8 class of 20 students were as follows:</li> </ul> <p style="text-align: center;">     6   7   5   7   7   8   7   6   9   7   4      10   6   8   8   9   5   6   4   8   </p> <ul style="list-style-type: none"> <li>▪ Present this information in a frequency table.</li> <li>▪ Construct a Histograms.</li> </ul>	Theory – 6 Hrs Practical – 3 Hrs Total – 9 Hrs	Paper ,pen calculator	<b>Classroom or Workshop</b>
<b>LU-1. Measure the Central Tendency&amp; Dispersion</b>	<ul style="list-style-type: none"> <li>▪ Calculate mean on given data</li> <li>▪ Calculate median on given data</li> <li>▪ Calculate mode of data</li> <li>▪ Calculate quantiles of data set</li> <li>▪ Calculate variance in data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand mean on given data</li> <li>▪ Understand median on given data</li> <li>▪ Understand mode of data</li> <li>▪ Understand quantiles of data set</li> <li>▪ Understand variance in data</li> </ul>	Theory – 03 Hrs Practical – 6 Hrs Total – 9 Hrs	Paper ,pen calculator	<b>Classroom or Workshop</b>

	<ul style="list-style-type: none"> <li>■ Calculate the skew</li> <li>■ Calculate kurtosis</li> </ul>	<ul style="list-style-type: none"> <li>■ Understand the skew</li> <li>■ Understand kurtosis</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>A clothing store needs to fire some employees. They decide to fire the employees who are selling at the bottom 15% of all sales people for the store. The mean total is \$430 a day sold, with a standard deviation of \$50. What is the least amount that a sales person can sell and still remain employed?</b></p>			
<b>LU-2. Apply Probability in AI</b>	<ul style="list-style-type: none"> <li>■ Apply the basic concept of Probability</li> <li>■ Apply basic Rules of probability in AI</li> <li>■ Develop the Venn Diagram of Probabilities</li> <li>■ Apply Axioms of Probability</li> <li>■ Calculate the Conditional probability</li> </ul>	<ul style="list-style-type: none"> <li>■ Understand the basic concept of Probability</li> <li>■ Understand basic Rules of probability in AI</li> <li>■ Understand the Venn Diagram of Probabilities</li> <li>■ Understand Axioms of Probability</li> <li>■ Understand the Conditional probability</li> <li>■ Understand Bayes' theorem to find probability</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p>	Theory – 06 Hrs Practical – 3 Hrs Total – 9 Hrs	Paper ,pen calculator	<b>Classroom or Workshop</b>

	<ul style="list-style-type: none"> <li>Apply Bayes' theorem to find probability</li> </ul>	<p><b>Three bags contain 3 reds, 7 black; 8 red, 2 black, and 4 red &amp; 6 black balls respectively. 1 of the bags is selected at random and a ball is drawn from it. If the ball drawn is red, find the probability that it is drawn from the third bag.</b></p>														
<b>LU-3. Random variables in AI</b>	<ul style="list-style-type: none"> <li>Apply Discrete random variables</li> <li>Apply Continuous random variables</li> <li>Apply Probability Mass Function</li> <li>Apply Distribution Functions of the variables</li> <li>Apply Expected Value of Random Variables</li> <li>Apply Variance of Random Variables</li> </ul>	<ul style="list-style-type: none"> <li>Understand Discrete random variables</li> <li>Understand Continuous random variables</li> <li>Understand Probability Mass Function</li> <li>Understand Distribution Functions of the variables</li> <li>Understand Expected Value of Random Variables</li> <li>Understand Variance of Random Variables</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li><b>Let <math>X</math> be a discrete random variable with the following probability distribution</b></li> </ul> <table border="1"> <tr> <td><math>X</math></td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr> <td><math>f(x)</math></td><td>0.15</td><td>0.35</td><td>0.10</td><td>0.25</td><td>0.15</td></tr> </table>	$X$	4	5	6	7	8	$f(x)$	0.15	0.35	0.10	0.25	0.15	<p><b>Theory – 06 Hrs</b></p> <p><b>Practical – 3 Hrs</b></p> <p><b>Total – 9 Hrs</b></p>	<p><b>Classroom Paper , pen calculator or Workshop</b></p>
$X$	4	5	6	7	8											
$f(x)$	0.15	0.35	0.10	0.25	0.15											

		<ul style="list-style-type: none"> <li>▪ Calculate mean and variance.</li> </ul>			
LU-4. Apply Discrete Probability Distribution	<ul style="list-style-type: none"> <li>▪ Apply Discrete Random variable in AI</li> <li>▪ Apply Binomial distribution in AI</li> <li>▪ Apply Poisson distribution</li> <li>▪ Apply Negative binomial distribution</li> <li>▪ Apply Geometric distribution</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand Discrete Random variable in AI</li> <li>▪ Understand Binomial distribution in AI</li> <li>▪ Understand Poisson distribution</li> <li>▪ Understand Negative binomial distribution</li> <li>▪ Understand Geometric distribution</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ Suppose a die is tossed 5 times. What is the probability of getting exactly 2 fours?</li> </ul>	Theory – 06 Hrs Practical – 3 Hrs Total – 9 Hrs	Paper ,pen calculator	<b>Classroom or Workshop</b>
LU-5. Apply Continuous probability distribution	<ul style="list-style-type: none"> <li>▪ Apply basic Continuous Random distribution in AI</li> <li>▪ Apply the Normal distribution</li> <li>▪ Apply the Standard normal</li> <li>▪ Apply Exponential distribution on given data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Apply basic Continuous Random distribution in AI</li> <li>▪ Apply the Normal distribution</li> <li>▪ Apply the Standard normal</li> <li>▪ Apply Exponential distribution on given data</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ X is a normally normally distributed variable with mean <math>\mu = 30</math> and standard deviation <math>\sigma = 4</math>. Find</li> </ul>	Theory – 06 Hrs Practical – 3 Hrs Total – 9 Hrs	Paper ,pen calculator	<b>Classroom or Workshop</b>

		<p>a) <math>P(x &lt; 40)</math>  b) <math>P(x &gt; 21)</math>  c) <math>P(30 &lt; x &lt; 35)</math></p>														
LU-6. Apply Regression and correlation	<ul style="list-style-type: none"> <li>Apply Simple Regression function</li> <li>Apply the Parameter estimation method using least square method</li> <li>Calculate Correlation</li> <li>Calculate Multiple correlation</li> </ul>	<ul style="list-style-type: none"> <li>Apply Simple Regression function</li> <li>Apply the Parameter estimation method using least square method</li> <li>Calculate Correlation</li> <li>Calculate Multiple correlation</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>The values of <math>y</math> and their corresponding values of <math>y</math> are shown in the table below</b></p> <table> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>y</td> <td>2</td> <td>3</td> <td>5</td> <td>4</td> <td>6</td> </tr> </table> <p>a) Find the least square regression line  <math>y = a x + b</math>.</p> <p>b) Estimate the value of <math>y</math> when <math>x = 10</math>.</p>	x	0	1	2	3	4	y	2	3	5	4	6	<p><b>Theory – 06 Hrs</b></p> <p><b>Practical – 3 Hrs</b></p> <p><b>Total – 9 Hrs</b></p>	<p>Paper ,pen calculator</p> <p><b>Classroom or Workshop</b></p>
x	0	1	2	3	4											
y	2	3	5	4	6											

## Module 2: 0619I&CT-45 Apply Object Oriented: Program (OOP)

**Objective:** This module covers the knowledge and skills required to understand how to design python Classes, and how to implement object-oriented concepts in python. Other concepts cover is Object, Inheritance, Polymorphism and Encapsulation.

**Duration: 90 Hours**

**Theory: 15 Hours**

**Practical: 75 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Create classes in Python	<ul style="list-style-type: none"> <li>▪ Create Class name “Parrot”</li> <li>▪ Define class attribute as bird</li> <li>▪ Create instance attribute of “name” and “age”</li> <li>▪ Instantiate the class by Name the blu of age 10 and woo of age 15</li> <li>▪ Access the class attributes by species</li> <li>▪ Access the instance attribute</li> <li>▪ Print the program as the follows;</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand the concepts of OOP</li> <li>▪ Understand the terminologies of</li> <li>▪ Understand the concept of classes in python</li> <li>▪ Define the characteristics of OOP</li> <li>▪ Differentiate between object and class</li> <li>▪ Understand the concept of class variables and instance variables) and methods, accessed via dot notation.</li> <li>▪ Understand the concept of python objects(Instances)</li> <li>▪ Describe how to do object instantiation</li> <li>▪ Describe how to create instance attributes in</li> </ul>	Theory – 3 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li> <pre> Blu is a bird Woo is also a bird Blu is 10 years old Woo is 15 years old </pre> </li> </ul>	<p>Python</p> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Define a class “Test” then create an object of the class with init method</b></p>		
LU-2. Create Methods in Python	<ul style="list-style-type: none"> <li>Create Class name “Parrot”</li> <li>Create instance attribute of “name” and “age”</li> <li>Create instance self method of sing return name and song</li> <li>Now create instance self method of dance return “dancing now” and name</li> <li>Instantiate the object blu with name blu and age 10</li> <li>Call instance methods and print the programing as following format:</li> </ul> <pre> Blu sings 'Happy' Blu is now dancing </pre>	<ul style="list-style-type: none"> <li>Understand the concept of methods in python</li> <li>Understand the concept Constructors and Destructors</li> <li>Understand the initialization of methods and its attributes.</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Declare a static method with the class “Car”</b></p>	<p>Theory – 3 Hrs.</p> <p>Practical – 15 Hrs.</p> <p>Total – 18 Hrs.</p>	<p>Computer Python</p> <p>Classroom or Workshop</p> <p>Python IDE</p>

<b>LU-3. Use of Inheritance in Python</b>	<ul style="list-style-type: none"> <li>▪ Create Parent Class “Bird”</li> <li>▪ Initialize an object with self-argument to print “Bird is ready”</li> <li>▪ Define whoisthis method with self argument to print “Bird”</li> <li>▪ Define swim method with self argument to print “Swim faster”</li> <li>▪ Create child class “Penguin”</li> <li>▪ Initialize an object with self argument</li> <li>▪ Call super function and print penguin is ready</li> <li>▪ Define whoisthis method with self argument to print “penguin”</li> <li>▪ Define run method with self argument to print “run faster”</li> <li>▪ Define variable peggy to call penguin method</li> <li>▪ Define variable peggy to whoisthis method</li> <li>▪ Define variable peggy to swim method</li> <li>▪ Define variable peggy to run method</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand the concept of inheritance in python</li> <li>▪ Understand the concept Constructors and Destructors</li> <li>▪ Understand the initialization of methods and its attributes.</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Create a class “Vehicle” and class “Car” which inherits the vehicle class and then create their methods. Call parent class methods</b></p>	Theory – 3 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop
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	<ul style="list-style-type: none"> <li>Print result must be as follows.</li> </ul> <pre> Bird is ready Penguin is ready Penguin Swim faster Run faster </pre>				
LU-4. Data Encapsulation in Python	<ul style="list-style-type: none"> <li>Create class Computer</li> <li>Initialize an object with self argument to set self maxprice is 900</li> <li>Define method sell with self argument and print “Selling price and call maxprice”</li> <li>Define setMaxPrice with self and price argument and set maxprice to price</li> <li>Set variable c to call computer</li> <li>Call sell method with variable c</li> <li>Change the maxprice with variable c to 1000</li> <li>Call sell method with variable c again</li> <li>Using setter function and setMaxprice with variable c to 100 as parameter</li> </ul>	<ul style="list-style-type: none"> <li>Understand the concept of methods in python</li> <li>Understand the concept Constructors and Destructors</li> <li>Understand the initialization of methods and its attributes.</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Creates Car class constructor. Initialize instance variables. Create property setter.</b></p>	Theory – 3 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li>■ Call sell method with variable c</li> <li>■ Run the program and as result print result as following</li> </ul> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <pre>Selling Price: 900 Selling Price: 900 Selling Price: 1000</pre> </div>			
<b>LU-5. Use Polymorphism in Python</b>	<ul style="list-style-type: none"> <li>■ Create class parrot</li> <li>■ Define fly method with self argument to print “Parrot can fly”</li> <li>■ Define swim method with self argument to print “Parrot can’t swim”</li> <li>■ Create class penguin</li> <li>■ Define fly method with self argument to print “Penguin can’t fly”</li> <li>■ Define swim method with self argument to print “Penguin can swim”</li> <li>■ Set common interface by defining flying_test and with argument bird</li> <li>■ Call fly method with argument</li> <li>■ Instantiate objects by calling class of</li> </ul>	<ul style="list-style-type: none"> <li>■ Understand the concept of methods in python</li> <li>■ Understand the concept Constructors and Destructors</li> <li>■ Understand the initialization of methods and its attributes.</li> <li>■ Understand the concept of overloading and overriding of methods</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Create a class “Car”. Define Start () method by passing a single argument. And set if b is not none so print the sum. Else print a. Initiate a method and pass 10 through it</b></p>	Theory – 3 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python IDE Classroom or Workshop

parrot to variable “blu”

- Instantiate objects by calling class of penguin to variable “peggy”
- Passing the object blu to the object flying\_test
- Passing the object peggy to the object flying\_test
- Run the program, the output will be

```
Parrot can fly
Penguin can't fly
```

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## Module 3: 0619I&CT-18 Utilize Database System

**Objective:** This module covers the knowledge and skills required the general overview of databases, introducing you to database history, modern database systems, the different models used to design a database, and Structured Query Language (SQL) with python, schemas and Entity Relationship (ER) Diagram

**Duration: 72 Hours**

**Theory: 15 Hours**

**Practical: 57 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Identify database systems	<ul style="list-style-type: none"> <li>▪ Identify the role of databases in organization</li> <li>▪ Gain basic concepts of databases</li> <li>▪ Compare database approach vs file-based system</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand the database with python</li> <li>▪ Understand the importance of database with AI</li> <li>▪ Understand basic concepts of databases</li> <li>▪ Understand the terminologies of database</li> <li>▪ Understand the types of database</li> <li>▪ Compare database approach vs. file-based system</li> <li>▪ Understand the software need for</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Draw the Charts with examples showing the different types of database</b></p>	Theory – 3 Hrs. Practical – 9 Hrs. Total – 12 Hrs.	Computer Python Python IDE	Classroom or Workshop

<b>LU-2. Setup MySQL with python</b>	<ul style="list-style-type: none"> <li>▪ Download the MySQL database from the following link</li> <li>▪ <a href="https://www.mysql.com/downloads/">https://www.mysql.com/downloads/</a></li> <li>▪ Install the MySQL database as per instructions</li> <li>▪ Open the command window and use PIP to install "MySQL Connector"</li> <li>▪ Import My_SQL.connector and save file as my_sql_demo.py</li> <li>▪ if this page is executed with no errors, you have the "mysql.connector" module installed</li> <li>▪ Set username and password from your SQL database</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand the SQL properties and types</li> <li>▪ Determine different type of SQL server</li> <li>▪ Understand object-relational mapping</li> <li>▪ Understand the relational model</li> <li>▪ Understand the different versions of MySQL</li> <li>▪ Understand he libraries use for SQL</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p>Create database name as “Mydb” and have following properties host="localhost", user="yourusername", and passwd="yourpassword".Print the database</p>	Theory – 3 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop
<b>LU-3. Introduce database system concept and architecture</b>	<ul style="list-style-type: none"> <li>▪ Apply database models, schemas and instances.</li> <li>▪ Use three schema architecture and data independence</li> <li>▪ Apply database languages and interfaces.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand database models, schemas and instances.</li> <li>▪ Understand schema architecture and data independence</li> <li>▪ Understand database languages and interfaces.</li> <li>▪ Understand centralized and client/server architecture for DBMSs</li> </ul>	Theory – 3 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li>■ Explore centralized and client/server architecture for DBMSs</li> <li>■ Classify database management systems</li> </ul>	<ul style="list-style-type: none"> <li>■ Understand database management systems</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Create a new schema in python then Creates the database schema on the server</b></p>			
<b>LU-4. Apply basic SQL</b>	<ul style="list-style-type: none"> <li>■ Apply relational model</li> <li>■ Work on SQL data definition and data types</li> <li>■ Perform basic retrieval queries in SQL.</li> <li>■ Use INSERT, UPDATE and DELETE queries in SQL</li> </ul>	<ul style="list-style-type: none"> <li>■ Understand relational model</li> <li>■ Work on SQL data definition and data types</li> <li>■ Perform basic retrieval queries in SQL.</li> <li>■ Use INSERT, UPDATE and DELETE queries in SQL</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Create table named “Customers of Column “NAME” VARCHAR (255) and Address VARCHAR (255). Set primary key in Customer table. Insert the following data in the table :</b></p> <ul style="list-style-type: none"> <li>■ Name and Address as follows (“John”, “Highway 21”), (Kin”, “Venus 66”), (Janet”, “Supa 01”), (Radel”, “Kilat</li> </ul>	Theory – 3 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop

		Street")			
<b>LU-5. Perform data modeling using the Entity-Relationship (ER) model</b>	<ul style="list-style-type: none"> <li>▪ Use attributes, keys, Entity, tuples, domains, relation instances.</li> <li>▪ Explore relationship types, relationship sets, roles, and structural constraints.</li> <li>▪ Use weak entity types</li> <li>▪ Refine the ER design for the COMPANY database</li> <li>▪ Develop ER diagrams</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand attributes, keys, Entity, tuples, domains, relation instances.</li> <li>▪ Understand relationship types, relationship sets, roles, and structural constraints.</li> <li>▪ Understand weak entity types</li> <li>▪ Understand ER diagrams</li> <li>▪ Understand the ER design for the different organization database</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <p><b>Draw an ER diagram for University database, which have entities for Students, Courses, and Lecturers. Student's entity can have attributes like Roll no, Name, and DeptID. They might have relationships with Courses and Lecturers.</b></p>	Theory – 3 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop



## Module 4: 0619I&CT-33 Perform Data Preprocessing in Python

**Objective:** This module covers the knowledge and skills required to understand how to perform data preprocessing, rescaling, binarizing , and standardizing the data with different techniques uses in python.

**Duration: 72 Hours**

**Theory: 12 Hours**

**Practical: 60 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Apply Data Preprocessing	<ul style="list-style-type: none"> <li>▪ Deal with missing data</li> <li>▪ Deal with categorical data</li> <li>▪ Split the dataset into training and testing sets</li> <li>▪ Scale the features</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand what is missing data</li> <li>▪ Understand how to deal with missing data</li> <li>▪ Understand the techniques to handle missing data</li> <li>▪ Understand what is categorical data</li> <li>▪ Understand how to deal with categorical data</li> <li>▪ Understand the techniques to handle categorical data</li> <li>▪ Understand the libraries use for missing data</li> <li>▪ Understand training and testing datasets</li> <li>▪ Understand the scaling of features.</li> <li>▪ PRACTICAL ACTIVITY <ul style="list-style-type: none"> <li>▪ Download the data set from the link below</li> <li>▪ <a href="https://raw.githubusercontent.com/jbrownlee">https://raw.githubusercontent.com/jbrownlee</a></li> </ul> </li> </ul>	<p>Theory – 03 Hrs.</p> <p>Practical – 15 Hrs.</p> <p>Total – 18 Hrs.</p>	<p>Computer</p> <p>Python</p> <p>Python IDE</p>	<p>Classroom or</p> <p>Workshop</p>

		<p><a href="e/Datasets/master/pima-indians-diabetes.data.csv">e/Datasets/master/pima-indians-diabetes.data.csv</a></p> <ul style="list-style-type: none"> <li>▪ Use SimpleImputer class to fill the missing data</li> <li>▪ Reshape the function to reshape the array</li> <li>▪ Use fit transform method to fit the imputer object</li> <li>▪ Summarize transformed data and print it</li> </ul>			
LU-2. Perform Rescaling of Data	<ul style="list-style-type: none"> <li>▪ Apply rescale data techniques</li> <li>▪ Import Libraries i.e. pandas, SciPy and NumPy</li> <li>▪ Import Mixmaxscaler from sklearn preprocessing class</li> <li>▪ Import Dataset</li> <li>▪ Call values with data frame method of pandas</li> <li>▪ Separate the data array into Input and output components</li> <li>▪ Determine the feature_range of data</li> <li>▪ Rescale data by using fit_transform</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand what is rescaling of Data</li> <li>▪ Understand how to deal with rescaling of Data</li> <li>▪ Understand the techniques to handle rescaling of Data</li> <li>▪ Understand the libraries use for rescaling of data</li> <li>▪ Understand when to scale.</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ Import require libraries</li> <li>▪ Load the data set from URL</li> <li>▪ <a href="https://webrobots.io/kickstarter-datasets/">https://webrobots.io/kickstarter-datasets/</a></li> </ul>	Theory – 03 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li>method</li> <li>▪ Summarize the transformed data</li> <li>▪ Run the code</li> <li>▪ Analyze the result</li> <li>▪ Use data rescaling in different algorithms.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Rescale your data using Scikit-learn MinMaxScaler class.</b></li> <li>▪ <b>Separate the array between input and output component</b></li> <li>▪ <b>Summarize transformed data</b></li> <li>▪ <b>Print rescaled data</b></li> </ul>			
<b>LU-3. Binarize the Data</b>	<ul style="list-style-type: none"> <li>▪ Apply Binarize Data techniques</li> <li>▪ Import Libraries that is pandas and Numpy</li> <li>▪ Import Binarizer from sklearn preprocessing class</li> <li>▪ Import Dataset</li> <li>▪ Call values with data frame method of pandas</li> <li>▪ Separate the data array into Input and output components</li> <li>▪ Determine the feature range of data</li> <li>▪ Binarize data by directng threshold limit</li> <li>▪ Fit method to set the threshold on data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand what is binarizing of data</li> <li>▪ Understand how to deal with binarizing of data</li> <li>▪ Understand Binarize Data techniques</li> <li>▪ Understand data binarizing in different algorithms</li> <li>▪ Understand when to perform binarizing</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ <b>Load the data set from URL</b></li> <li>▪ <a href="https://raw.githubusercontent.com/jbrownlee/Datasets/master/pima-indians-diabetes.csv">https://raw.githubusercontent.com/jbrownlee/Datasets/master/pima-indians-diabetes.csv</a></li> <li>▪ <b>Rescale your data using Scikit-learn Binarizer class.</b></li> </ul>	Theory – 03 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li>▪ Apply transform on Binarize data</li> <li>▪ Summarize the transformed data</li> <li>▪ Run the code</li> <li>▪ Analyze the result</li> <li>▪ Use data binarizing in different algorithms</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Separate the array between input and output component</b></li> <li>▪ <b>Summarize transformed data</b></li> <li>▪ <b>Print rescaled data Print binarize data</b></li> </ul>			
<b>LU-4. Standardize Data</b>	<ul style="list-style-type: none"> <li>▪ Implement the Standardize Data techniques</li> <li>▪ Import Libraries that is pandas and Numpy</li> <li>▪ Import standardscaler from sklearn preprocessing class</li> <li>▪ Import Dataset</li> <li>▪ Call values with data frame method of pandas</li> <li>▪ Separate the data array into Input and output components</li> <li>▪ Determine the feature range of data</li> <li>▪ Standardize the data by using standardscaler Method</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand what is Standardize Data</li> <li>▪ Understand the Standardize Data techniques</li> <li>▪ Understand how to deal with Standardize Data</li> <li>▪ Understand when to perform Data Standardization.</li> </ul> <p><b>PRACTICAL ACTIVITY</b></p> <ul style="list-style-type: none"> <li>▪ <b>Load the data set from URL</b></li> <li>▪ <a href="https://raw.githubusercontent.com/jbrownlee/Datasets/master/pima-indians-diabetes.csv">https://raw.githubusercontent.com/jbrownlee/Datasets/master/pima-indians-diabetes.csv</a></li> <li>▪ <b>Standardize your data using Scikit-learn using the MinMaxScaler class.</b></li> <li>▪ <b>Separate the array between input and output component</b></li> </ul>	Theory – 03 Hrs. Practical – 15 Hrs. Total – 18 Hrs.	Computer Python Python IDE	Classroom or Workshop

- Call Fit method to set the values
- Apply transform on Standardized Data
- Summarize the transformed data
- Run the code
- Analyze the result
- Use data Standardizing in different algorithms

- **Call StandardScaler Class**
- **Summarize transformed data**

## Module 5: 0619I&CT-34 Perform Data Handling in Python

**Objective** This competency standard covers Integration of data, cleaning of data, data transformation before process using different techniques and libraries in python so the execution of algorithm will be more efficient and more algorithms can be executed in one dataset.

**Duration: 66 Hours**

**Theory: 15Hours**

**Practice: 51 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Perform Data Integration	<ul style="list-style-type: none"> <li>▪ Trainee will be able to:</li> <li>▪ Put different format data from various sources into a uniform shape</li> <li>▪ Merge data with defined homogenize data-flow</li> <li>▪ Perform tight coupling of data</li> <li>▪ Perform loose coupling of data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and understanding of different form of data.</li> <li>▪ Knowledge and understanding of merging of data.</li> <li>▪ Knowledge and understanding of coupling of data.</li> </ul> <p><b>PRACTICAL ACTIVITY:</b></p> <ul style="list-style-type: none"> <li>▪ <b>Importing the pandas libraries</b></li> <li>▪ <b>Download the data set from the link below:</b></li> <li>▪ <a href="https://github.com/shanealynn/Pandas-Merge-Tutorial">https://github.com/shanealynn/Pandas-Merge-Tutorial</a></li> </ul>	Theory – 03 Hrs. Practical – 3 Hrs. Total – 6 Hrs.	Computer Python Python IDE	Classroom or Workshop

		<ul style="list-style-type: none"> <li>▪ <b>Left merge the datasets as keep every row in the left data frame.</b></li> <li>▪ <b>Set missing values of the “on” variable in the right dataframe</b></li> </ul>			
LU-2. Performing Data Cleaning	<ul style="list-style-type: none"> <li>▪ Trainee will be able to:</li> <li>▪ Recognize the different techniques for cleaning</li> <li>▪ Identify outliers and smooth out noisy instances</li> <li>▪ Drop Columns in a Data Frame</li> <li>▪ Change the Index of a Data Frame</li> <li>▪ Tide up Fields in the Data</li> <li>▪ Combine str Methods with NumPy to Clean Columns</li> <li>▪ Clean the Entire Dataset Using the apply map Function</li> <li>▪ Rename Columns and apply</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and understanding of data and noise.</li> <li>▪ Knowledge and understanding of dropping of column in data set.</li> </ul> <p><b>PRACTICAL ACTIVITY:</b></p> <ul style="list-style-type: none"> <li>▪ <b>Importing the pandas</b></li> <li>▪ <b>Load the data set “BL-Flickr-Images-Book.csv” from the following URL</b></li> <li>▪ <a href="https://github.com/realpython/python-data-cleaning/tree/master/Datasets">https://github.com/realpython/python-data-cleaning/tree/master/Datasets</a></li> <li>▪ <b>Drop the following column from the dataset ‘Edition Statement’, ‘Corporate Author’, ‘Corporate Contributors’, ‘Former owner’,</b></li> </ul>	Theory – 03 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop

	Skipping Rows	<p>'Engraver', 'Contributors', 'Issuance type', and 'Shelfmarks'</p> <ul style="list-style-type: none"> <li>▪ Print the dataframe</li> </ul>			
LU-3. Perform Data Transformation	<ul style="list-style-type: none"> <li>▪ Trainee must be able to:</li> <li>▪ Perform data discovery where you identify the sources and data types.</li> <li>▪ Determine the structure and data transformations that need to occur.</li> <li>▪ Perform data mapping to define how individual fields are mapped, modified, joined, filtered, and aggregated.</li> <li>▪ Perform Data Binning or Bucketing</li> <li>▪ Convert categorical data into Boolean values</li> <li>▪ Apply Centering and scaling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and understanding of Data types.</li> <li>▪ Knowledge and understanding of data mapping.</li> <li>▪ Knowledge and understanding of conversion of data.</li> </ul> <p><b>PRACTICAL ACTIVITY:</b></p> <ul style="list-style-type: none"> <li>▪ Change the Index of a Data Frame</li> <li>▪ Replace the existing index with Identifier column using set_index</li> <li>▪ Search the information in first label of the index that is 206</li> <li>▪ Determine the datatype of a value In Identifier column</li> <li>▪ Perform regex across data</li> <li>▪ Clean the Place of Publication</li> </ul>	Theory – 03 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop

	<ul style="list-style-type: none"> <li>data techniques</li> <li>▪ Perform Grouping on data</li> </ul>	<b>field</b>			
<b>LU-4. Perform Data Discretization</b>	<ul style="list-style-type: none"> <li>▪ Trainee must be able to</li> <li>▪ Apply data Discretization Strategies</li> <li>▪ Discretize data by binning</li> <li>▪ Discretize data by Histogram analysis</li> <li>▪ Discretize data by decision tree and correlation</li> <li>▪ Perform hierarchy Generation for Normal data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and understanding of data discretization strategies.</li> <li>▪ Knowledge and understanding of histogram analysis.</li> <li>▪ Knowledge and understanding of tree and correlation.</li> <li>▪ Knowledge and understanding of hierarchy generation for normal data.</li> </ul> <p><b>PRACTICAL ACTIVITY:</b></p> <p><b>Import data set and perform data discretization, represent data set in histogram, tree and correlation.</b></p>	Theory – 03 Hrs. Practical – 12 Hrs. Total – 15 Hrs.	Computer Python Python IDE	Classroom or Workshop
<b>LU-5. Perform Data Reduction</b>	<ul style="list-style-type: none"> <li>▪ Trainee will be able to:</li> <li>▪ Apply the techniques of data reduction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge and understanding of data reduction.</li> <li>▪ Knowledge and understanding of</li> </ul>	Theory – 03 Hrs. Practical – 12 Hrs.	Computer Python	Classroom or Workshop

- Apply the concept of wavelet transforms
- Apply the principle components of analysis
- Apply the concept of parametric data reduction
- Apply the concept of histogram
- Apply the concept of sampling
- Apply the concept of data aggregation

- principle component of analytics.
- Knowledge and understanding of data sampling

#### **PRACTICAL ACTIVITY:**

**Apply basic data reduction techniques to remove unnecessary**

carat	cut	color	clarity	depth	table	price	x	y	z
0.23	Ideal	E	SI2	61.5	55.0	326	3.95	3.98	
0.21	Premium	E	SI1	59.8	61.0	326	3.89	3.84	
0.23	Good	E	VS1	56.9	65.0	327	4.05	4.07	
0.29	Premium	I	VS2	62.4	58.0	334	4.20	4.23	
0.31	Good	J	SI2	63.3	58.0	335	4.34	4.35	
0.24	Very Good	J	VVS2	62.8	57.0	336	3.94	3.96	
0.24	Very Good	I	VVS1	62.3	57.0	336	3.95	3.98	
0.26	Very Good	H	SI1	61.9	55.0	337	4.07	4.11	
0.22	Fair	E	VS2	65.1	61.0	337	3.87	3.78	

**data from data set.**

Total – 15 Hrs.

Python IDE

## Digital Skills

### Perform Basics Computer Operations

**Objective:** This competency introduces computing skills which will make student to learn basic computing skills.

**Duration: 15 Hours**

**Theory: 03 Hours**

**Practice: 12 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Identify basic components of computers</b>	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>Identify basic components of computers</li><li>Identify CPU</li><li>Identify memory</li><li>Identify input/output and other peripheral devices</li></ul>	<ul style="list-style-type: none"><li>Use safe work practices to ensure ergonomic, work organization, energy and resource conservation requirements are</li></ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room

		<p>addressed</p> <p>Use monitor anti-glare and radiation reduction screens where appropriate</p> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Identify potential hazards in computer lab and use appropriate actions to mitigate them*</li> </ul>			
<b>LU2. Identify storage devices of computers</b>	<p><b>Trainee will be able to:</b></p> <p>Classify and Use of storage media and devices</p> <p>Use of physical and logical storage</p> <p>Use of file storage system</p>	<ul style="list-style-type: none"> <li>• Storage Media and their devices used by the organization</li> <li>• Basic knowledge of system usage</li> <li>• Basic knowledge of storage media</li> </ul> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Identify the</li> </ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room

		haphazard of storage media			
<b>LU3. Identify different types of software</b>	<b>Trainee will be able to:</b> Use system software Use application software Use operating systems	<ul style="list-style-type: none"> <li>• Current business practices related to Softwares</li> </ul> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• using software to prepare reports</li> <li>• Functions and uses of application software</li> </ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU4. Explore the internet and web</b>	<b>Trainee will be able to:</b> Use internet applications Use E-mail Use internet and world wide web	<ul style="list-style-type: none"> <li>• Functions and uses of Internet and Web</li> </ul> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Prepare a chart of web and internet criteria in existing world.</li> </ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## Use Operating System and Computer Hardware

**Objective:** This module describes the performance outcomes, skills and knowledge required to select, configure and use computer operating systems and basic computer hardware.

**Duration: 15 Hours****Theory: 03 Hours****Practice: 12 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Identify operating system and Computer peripherals</b>	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>• Determine ICT organizational requirements and specifications</li><li>• Identify and select operating system</li><li>• Identify appropriate external hardware components</li><li>• Identify internal hardware components</li></ul>	<ul style="list-style-type: none"><li>• Basic knowledge of current industry-accepted operating system, hardware and software products</li></ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>• Identify which operating system can be installed on the given hardware system</li></ul>	Theory-1 Hrs Practice-03 Hrs Total- 4 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU2. Install and configure operating system and application software with</b>	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>• Install and configure operating system to meet organizational requirements</li><li>• Identify the functions associated with the operating system and</li></ul>	<ul style="list-style-type: none"><li>• Compatibility of an operating system, in respect to other versions</li></ul>	Theory-1 Hrs Practice-03 Hrs Total- 4 Hrs	Desktop Computer/Laptop	Computer Lab Class room

<b>hardware components</b>	<p>associated boot process</p> <ul style="list-style-type: none"> <li>Configure power-management settings to minimize power consumption as an environmentally sustainable measure</li> <li>Use both the graphical user interface and the command line interface to perform basic tasks</li> <li>Install or upgrade application software onto the operating system and hardware configuration</li> <li>Determine the relationship between an application program, the operating system and hardware</li> <li>Identify general differences between the different computer platforms and their respective operating systems</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>Install Microsoft office application in the given system.</li> </ul>			
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<b>LU3. Optimize operating system and hardware components</b>	<ul style="list-style-type: none"> <li>Optimize operating system using included tools or third-party utilities</li> <li>Customize the graphical user interface</li> <li>Use techniques unique to the command line interface</li> <li>Set up and configure external hardware components and check functionality</li> <li>Install drivers as appropriate and check functionality</li> </ul>	<ul style="list-style-type: none"> <li>Function of single-user and multi-user operating systems</li> <li>Interoperability between operating systems</li> </ul> <p><b><u>Practical activity</u></b></p> <p>Check compatibility of the required drivers, install and check their functionality.</p>	Theory-1 Hrs Practice-06 Hrs Total- 7 Hrs	Desktop Computer/Laptop	Computer Lab Class room
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## Use Word Processor

**Objective:** This unit describes the skills and knowledge required to operate word- processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels. It applies to individuals in the workplace using fundamental knowledge of word-processing under direct supervision or with limited responsibility.

**Duration: 24 Hours**

**Theory: 3 Hours**

**Practice: 21 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create documents	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>Open word-processing application, create document and add data according to information requirements</li><li>Use document templates as required</li><li>Use simple formatting tools when creating the document</li><li>Save document to directory</li></ul>	<ul style="list-style-type: none"><li>Create and save new file</li><li>Use of appropriate template as required</li></ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>Develop a documents in MS word using format tools as per the requirement of the task.</li></ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room
LU2. Customize basic settings	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>Adjust page layout to meet</li></ul>	<ul style="list-style-type: none"><li>Understand and edit page layout</li></ul>	Theory-0.5 Hrs Practice-03 Hrs	Desktop Computer/Laptop	Computer Lab Class room

<b>to meet page layout conventions</b>	<p>information requirements</p> <ul style="list-style-type: none"> <li>• Open and view different toolbars</li> <li>• Change font format to suit document purpose</li> <li>• Change alignment and line spacing according to document information requirements</li> <li>• Modify margins to suit the document purpose</li> <li>• Open and switch between several documents</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Open MS word and change select appropriate layout of the page as per the requirement adding header and footer in the document.</li> </ul>	Total- 3.5 Hrs		
<b>LU3. Format documents</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Use formatting features and styles as required</li> <li>• Highlight and copy text from another area in the document or from another active document</li> <li>• Insert headers and footers to incorporate necessary data</li> <li>• Save document in another file format</li> <li>• Save and close document to a</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Formatting word document</li> </ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	storage device				
LU4. Create tables	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>• Insert standard table into document</li> <li>• Change cells to meet information requirements</li> <li>• Insert and delete columns and rows as necessary</li> <li>• Use formatting tools according to style requirements</li> </ul>	<b>Practical activity</b> <ul style="list-style-type: none"> <li>• Create and edit table</li> </ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room
LU5. Add images	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>• Insert appropriate images into document and customize as necessary</li> <li>• Position and resize images to meet document formatting needs</li> </ul>	<b>Practical activity</b> <ul style="list-style-type: none"> <li>• Insert, position and resize images</li> </ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room
LU6. Print documents	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>• Preview document in print preview mode</li> <li>• Select basic print settings</li> </ul>	<b>Practical activity</b> <ul style="list-style-type: none"> <li>• Printing document according to organization need</li> </ul>	Theory-0.5 Hrs Practice-06 Hrs Total- 6.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	• Print document or part of document from printer				
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## Operate Presentation Package

**Objective:** This module describes the skills and knowledge required to operate power point processing applications and perform basic operations, including creating and formatting presentations, adding slide show effects and printing presentations and notes. It applies to individuals in the workplace using fundamental knowledge of PowerPoint processing under direct supervision or with limited responsibility.

**Duration: 24 Hours**

**Theory: 03 Hours**

**Practice: 21 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create Presentations	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"><li>• Open presentation package and create a simple design for a presentation according to organizational requirements</li><li>• Open blank presentation and add text and graphics</li><li>• Apply existing styles within a presentation</li><li>• Use presentation template and slides to create a presentation</li><li>• Use various tools to improve the</li></ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>• Basic technical terminology to read help files and prompts</li></ul>	Theory-0.6 Hrs Practice-3 Hrs Total- 3.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>look of the presentation</p> <ul style="list-style-type: none"> <li>• Save presentation to the appropriate storage device and folder</li> </ul>				
<b>LU2. Customize basic settings</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Adjust display to meet user requirements</li> <li>• Open and view different toolbars to view options</li> <li>• Ensure font settings are appropriate for the presentation purpose</li> <li>• View multiple slides at once</li> </ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>• effect of formatting and appearance on the readability and usability of presentation</li> </ul>	Theory-0.6 Hrs Practice-3 Hrs Total- 3.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU3. Format presentations</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Use and incorporate organizational charts and bulleted lists, and modify as required</li> <li>• Add objects and manipulate to meet presentation purposes</li> <li>• Import objects and modify for presentation purposes</li> <li>• Modify slide layout, including text</li> </ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>• Insert objects and charts</li> <li>• </li> </ul>	Theory-0.6 Hrs Practice-3 Hrs Total- 3.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>and colors, to meet presentation requirements</p> <ul style="list-style-type: none"> <li>• Use formatting tools as required within the presentation</li> <li>• Duplicate slides within and across a presentation</li> <li>• Reorder sequence of slides and delete slides for presentation purposes</li> <li>• Save presentation in another format</li> <li>• Save to storage device and close presentation</li> </ul>				
<b>LU4. Add slide show effects</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Incorporate pre-set animation and multimedia effects into presentation as required to enhance the presentation</li> <li>• Add slide transition effects to presentation to ensure smooth progression through the</li> </ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>• suitable presentation effects for different audiences</li> </ul>	Theory-0.6 Hrs Practice-3 Hrs Total- 3.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>presentation</p> <ul style="list-style-type: none"> <li>• Test presentation for overall effect</li> <li>• Use onscreen navigation tools to start and stop slide show or move between different slides as required</li> </ul>				
<b>LU5. Print presentation and notes</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Select appropriate print format for presentation</li> <li>• Select preferred slide orientation</li> <li>• Add notes and slide numbers</li> <li>• Preview slides and run spell check before presentation</li> <li>• Print selected slides and submit presentation to appropriate person for feedback</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Preview and print presentations</li> </ul>	Theory-0.6 Hrs Practice-6 Hrs Total- 6.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## Use Spreadsheet Applications

**Objective:** This module describes the skills and knowledge required to operate Spreadsheet and perform basic operations, including creating and formatting spreadsheet, creating tables, incorporating chart and object in it, and printing labels.

**Duration: 27 Hours**

**Theory: 06 Hours**

**Practice: 21 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Create spreadsheets</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"><li>• Open the spreadsheet application, create spreadsheet files and enter numbers, text and symbols into cells according to information requirements</li><li>• Enter simple formulas and functions using cell referencing when required</li><li>• Correct formulas when error messages occur</li><li>• Use a range of common tools during spreadsheet development</li><li>• Edit columns and rows within the</li></ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>• basic technical terminology related to reading help files and prompts</li><li>• purpose, use and function of spreadsheet applications</li><li>• create, edit and save spread sheet</li></ul>	Theory-1.2 Hrs Practice-3 Hrs Total- 4.2 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>spreadsheet</p> <ul style="list-style-type: none"> <li>• Use the auto-fill function to increment data where required</li> <li>• Save the spreadsheet to a folder on a storage device</li> </ul>				
<b>LU2. Customize basic settings</b>	<ul style="list-style-type: none"> <li>• Adjust page layout to meet user requirements or special needs</li> <li>• Open and view different toolbars</li> <li>• Change font settings so they are appropriate for the document purpose</li> <li>• Change alignment options and line spacing according to spreadsheet formatting features</li> <li>• Format cell to display different styles as required</li> <li>• Modify margin sizes to suit the purpose of the spreadsheets</li> <li>• View multiple spreadsheets concurrently</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Formatting spread sheet</li> </ul>	Theory-1.2 Hrs Practice-3 Hrs Total- 4.2 Hrs	Desktop Computer/Laptop	Computer Lab Class room

<b>LU3. Format spreadsheet</b>	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>• Use formatting features as required</li> <li>• Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet</li> <li>• Use formatting tools as required within the spreadsheet</li> <li>• Align information in a selected cell as required</li> <li>• Insert headers and footers using formatting features</li> <li>• Save spreadsheet as another file type</li> <li>• Save to storage device and close spreadsheet</li> </ul>	<b>Practical activity</b> <ul style="list-style-type: none"> <li>• effect of formatting and appearance on the readability and usability of spreadsheets</li> </ul>	Theory-1.2 Hrs Practice-3 Hrs Total- 4.2 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU4. Incorporate object and chart in spreadsheet</b>	<ul style="list-style-type: none"> <li>• Import an object into an active spreadsheet</li> <li>• Manipulate imported object by using formatting features</li> <li>• Create a chart using selected data</li> </ul>	<b>Practical activity</b> <ul style="list-style-type: none"> <li>• Inserting and editing object in spread sheet</li> <li>• Inserting and</li> </ul>	Theory-1.2 Hrs Practice-3 Hrs Total- 4.2 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	in the spreadsheet <ul style="list-style-type: none"> <li>Display selected data in a different chart</li> <li>Modify chart using formatting features</li> </ul>	modifying chart in spreadsheet			
<b>LU5. Print spreadsheet</b>	<ul style="list-style-type: none"> <li>Preview spreadsheet in print preview mode</li> <li>Select basic printer options</li> <li>Print spreadsheet or selected part of spreadsheet</li> <li>Submit the spreadsheet to appropriate person for approval or feedback</li> </ul>	<b><u>Practical activity</u></b> <ul style="list-style-type: none"> <li>Preview and Print spread sheet</li> </ul>	Theory-1.2 Hrs Practice-6 Hrs Total- 7.2 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## Operate Digital Media Technology

**Objective:** This unit describes the performance outcomes, skills and knowledge required to identify, select and use a digital media package and supporting technologies.

**Duration: 21 Hours****Theory: 03 Hours****Practice: 18 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Use appropriate OHS office work practices</b>	<b>Trainee will be able to:</b> <ul style="list-style-type: none"><li>• Use safe work practices to ensure ergonomic, work organization, energy and resource conservation requirements are addressed</li><li>• Use wrist rests and document holders where appropriate</li><li>• Use monitor anti-glare and radiation reduction screens where appropriate</li></ul>	<ul style="list-style-type: none"><li>• OHS principles and responsibilities for ergonomics, such as work periods and breaks</li></ul> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"><li>• Identify potential hazards in computer lab and use appropriate actions to mitigate them*</li></ul>	Theory-0.75 Hrs Practice-06 Hrs Total- 6.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU2. Identify and select appropriate digital media package</b>	<b>Trainee will be able to:</b> Identify the basic requirements of a design brief, including user environment	<ul style="list-style-type: none"><li>• Digital Media used by the organization</li><li>• Basic knowledge of Digital Media</li></ul>	Theory-0.75 Hrs Practice-06 Hrs Total- 6.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>Research and review suitable available digital media packages</p> <p>Select an appropriate digital media package to meet design brief requirements</p>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Identify and select the Digital media package..</li> </ul>			
<b>LU3. Use digital media package</b>	<p><b>Trainee will be able to:</b></p> <p>Procure or create suitable data to meet requirements of the brief</p> <p>Manipulate data using digital media package tools</p> <p>Ensure naming and storing of documents in appropriate file format in directories or folders</p>	<ul style="list-style-type: none"> <li>Current business practices related to <b>Practical activity</b> using digital media packages to prepare reports</li> <li>Functions and uses of Digital Media</li> </ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU4. Review digital media design</b>	<p><b>Trainee will be able to:</b></p> <p>Evaluate design for creative, dramatic and technical quality, file size, and suitability to meet the brief</p> <p>Test and run any incorporated graphics, video or sound as part of a digital media presentation and present designs in the</p>	<ul style="list-style-type: none"> <li>Functions and uses of designing of digital media</li> </ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Design a Digital media</li> </ul>	Theory-0.75 Hrs Practice-03 Hrs Total- 3.75 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	appropriate format				
	Review final product against design brief				

## Create User Documentation

**Objective:** This unit describes the performance outcomes, skills and knowledge required to create user documentation that is clear to the target audience and easy to navigate.

**Duration: 15 Hours**

**Theory: 03 Hours**

**Practice: 12 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Determine documentation standards and requirements</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"><li>Determine documentation requirements</li><li>Investigate documentation and industry standards for requirements and determine appropriate application to user documentation</li><li>Design documentation templates using appropriate software and obtain approval from appropriate person</li></ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>Determine the standards and importance of documentation of software.</li></ul>	Theory-01 Hrs Practice-4 Hrs Total- 5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

<b>LU2. Produce user documentation</b>	<p>Conduct a review of the subject system, program, network or application in order to understand its functionality</p> <p>Gather existing technical, design or user specifications and supporting documentation</p> <p>Create user documentation based on template to record the operation of the subject system, program, network or application</p>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Produce user documentation.</li> </ul>	Theory-01 Hrs Practice-4 Hrs Total- 5 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU3. Review and obtain sign-off</b>	<p>Submit user documentation to target audience for review</p> <p>Gather and analyze feedback</p> <p>Make changes to user documentation</p> <p>Submit user documentation to appropriate person for approval</p>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Review the overall sign off.</li> </ul>	Theory-01 Hrs Practice-4 Hrs Total- 5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## Create Technical Documentation

**Objective:** This unit describes the performance outcomes, skills and knowledge required to create technical documentation that is clear to the target audience and easy to navigate.

**Duration: 24 Hours**

**Theory: 03 Hours**

**Practice: 21 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1. Identify and analyze documentation requirements and client needs</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"><li>Consult with client to identify documentation requirements</li><li>Interpret and evaluate documentation requirements and confirm details with client</li><li>Investigate industry and documentation standards for requirements</li><li>Define and document the scope of work to be produced</li><li>Consult with client to validate and confirm the scope of work</li></ul>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>Determine and analyze documentation requirements and clients needed.</li></ul>	Theory-0.6 Hrs Practice-6 Hrs Total- 6.6 Hrs	Desktop Computer/Laptop	Computer Lab Class room

<b>LU2. Design documentation</b>	<p>Identify information requirements with reference to layout and document structure</p> <p>Create document templates and style guides consistent with information requirements</p> <p>Conduct a review of the system in order to understand its functionality</p> <p>Extract content that meets information requirements according to copyright restrictions</p> <p>Develop the structure of the technical documentation giving focus to the flow of information, style, tone and content format</p> <p>Validate the technical documentation structure with the client</p>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Design Documnetation</li> </ul>	<p>Theory-0.6 Hrs</p> <p>Practice-6 Hrs</p> <p>Total- 6.6 Hrs</p>	<p>Desktop</p> <p>Computer/Laptop</p>	<p>Computer Lab</p> <p>Class room</p>
<b>LU3. Develop documentation</b>	<p>Write technical documentation based on the template and scope of work using the information</p>	<p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Develop Documentation</li> </ul>	<p>Theory-0.6 Hrs</p> <p>Practice-3 Hrs</p> <p>Total- 3.6 Hrs</p>	<p>Desktop</p> <p>Computer/Laptop</p>	<p>Computer Lab</p> <p>Class room</p>

	<p>gathered</p> <p>Translate technical terminology into plain English where appropriate</p> <p>Apply content format and style according to documentation standards and templates</p>				
<b>LU4. Evaluate and edit documentation</b>	<p>Submit technical documentation to appropriate person for review</p> <p>Gather and analyze feedback</p> <p>Incorporate alterations into the technical documentation</p> <p>Edit the technical documentation for technical and grammatical accuracy</p>	<p><b><u>Practical activity</u></b></p> <p>Evaluate Documentation</p>	<p>Theory-0.6 Hrs</p> <p>Practice-3 Hrs</p> <p>Total- 3.6 Hrs</p>	<p>Desktop</p> <p>Computer/Laptop</p>	<p>Computer Lab</p> <p>Class room</p>
<b>LU5. Prepare documentation for publication</b>	<p>Check that the completed technical documentation meets client requirements and scope of work</p> <p>Submit the technical documentation to appropriate person for approval</p>	<p><b><u>Practical activity</u></b></p> <p>Prepare Documentation</p>	<p>Theory-0.6 Hrs</p> <p>Practice-3 Hrs</p> <p>Total- 3.6 Hrs</p>	<p>Desktop</p> <p>Computer/Laptop</p>	<p>Computer Lab</p> <p>Class room</p>

	Prepare the technical documentation for publication and distribution using appropriate channels Edit the technical documentation for technical and grammatical accuracy				
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## **Use social media tools for collaboration and engagement**

**Objective:** This unit describes the performance outcomes, skills and knowledge required to establish a social networking presence using social media tools and applications. The unit specifically identifies the requirement to review, compare and use different types of social networking tools and applications.

**Duration: 18 Hours**

**Theory: 03 Hours**

**Practice: 15 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials	Learning
Learning Unit	Learning Outcomes	Learning Elements	Duration	Required	Place
LU1. <b>Describe different types of social media tools and applications</b>	Explain characteristics of the term social media  Identify different types of social-media tools and applications  Illustrate some of the issues associated with the use of social media tools and applications	<ul style="list-style-type: none"> <li>Main types of social media and basic features of different applications</li> <li>Main Parts of computer</li> <li>Calculating computer capacity</li> </ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>Select the appropriate hardware &amp; software as per the requirement of task.</li> </ul>	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	Desktop Computer/Laptop	Computer Lab Class room
LU2. <b>Compare different types of social media tools and applications</b>	<b>Trainee will be able to:</b>  Select one social media type for review  Review most popular tools and applications within that social media type  Itemize benefits across a range of	<ul style="list-style-type: none"> <li>Social media tools and basic categories of social media</li> <li>Basic ergonomics of computer use</li> </ul> <p><b>Practical activity</b></p>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>the most popular tools and applications</p> <p>Select most appropriate social media tool or application</p>	<ul style="list-style-type: none"> <li>• Create a chart of Different types of Social Media tools</li> </ul>			
<b>LU3. Set up and use popular social media tools and applications</b>	<p><b>Trainee will be able to:</b></p> <p>Identify social media tools and applications for possible implementation</p> <p>Initiate preferred social media tools and applications for use</p> <p>Establish social media interface using text and file content</p> <p>Initiate social networking interaction</p> <p>Test and evaluate tools and applications for ease of use</p> <p>Present findings</p>	<ul style="list-style-type: none"> <li>• Relevant types of social media tools</li> <li>• Applications of social media</li> <li>• Basic ergonomics of Social media</li> </ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"> <li>• Set up social media tools</li> </ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room
<b>LU4. Product/e/output data using computer system</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Entered data are processed using appropriate software commands</li> <li>• Data are printed out as required</li> </ul>	<ul style="list-style-type: none"> <li>• Relevant types of software</li> </ul>	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	<p>using computer hardware/peripheral devices in accordance with standard operating procedures</p> <ul style="list-style-type: none"> <li>• Files and data are transferred between compatible systems using computer software, hardware/ peripheral devices in accordance with standard operating procedures</li> </ul>	<p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"> <li>• Develop a required documents in MS word and take out print.</li> </ul>		
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## E-Commerce – SEO (Search Engine Optimization)

**Objective:** This competency unit covers to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means.

**Duration: 18 Hours**

**Theory: 03 Hours**

**Practice: 15 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU5. SEO (Search Engine Optimization)</b>	<b>Trainee will be able to:</b> Apply SEO techniques Employ SEO key words Demonstrate SEO techniques to priorities their site or web application using automated tools	<ul style="list-style-type: none"><li>SEO techniques.</li></ul> <p><b><u>Practical activity</u></b></p> <ul style="list-style-type: none"><li>Identify potential Search Engine Tags used in enhancing your SEO skills</li></ul>	Theory-3 Hrs Practice-15 Hrs Total- 18 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## **E-Commerce – SCM (Supply Chain Management)**

**Objective:** This competency unit covers to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means.

**Duration: 15 Hours**

**Theory: 03 Hours**

**Practice: 12 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU6. SCM (Supply Chain Management)</b>	<b>Trainee will be able to:</b> Identity potential Suppliers Select the appropriate supplier Place order as per requirement/inventory Inspect received order Maintain Inventory as per Inventory Control / store keeping techniques Identity different available transportation mode Identify steps of reverse SCM i-e from consumer to organization	<ul style="list-style-type: none"><li>SEO techniques.</li></ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>Apply Supply chain management to local websites for testing.</li></ul>	Theory-3 Hrs Practice-12 Hrs Total- 15 Hrs	Desktop Computer/Laptop	Computer Lab Class room

## E-Commerce – Social Media Marketing

**Objective:** This competency unit covers to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means.

**Duration: 24 Hours**

**Theory: 03 Hours**

**Practice: 21 Hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU7. Social Media Marketing</b>	<b>Trainee will be able to:</b> Identify different Social media marketing techniques Apply suitable Classified Advertisement techniques on social media	<ul style="list-style-type: none"><li>SEO techniques.</li></ul> <p><b>Practical activity</b></p> <ul style="list-style-type: none"><li>Apply SMM to local websites for</li></ul>	Theory-3 Hrs Practice-21 Hrs Total- 24 Hrs	Desktop Computer/Laptop	Computer Lab Class room

	Perform Electronic Mail Marketing Create Blogs	testing.			
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