Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"

Course Contents / Lesson Plan
Course Title: Big Data Analytics
Duration: 6 Months

Revised Edition

Course Title	Big Data Analytics
Objectives and Expectations	**Employable skills and hands-on practice for Big Data Analytics** This is a special course designed to address unemployment in the youth. The course aims to empower students with the right skillset that would help them get Big Data Analyst jobs in the industry. The course offers a broad, cross-disciplinary learning experience for students looking to pursue careers in relevant industry. In this course, students are introduced to key aspects of the design process, from research/strategy, creative brief development, and campaign development to teamwork and presentation and content creation so that they can enter the relevant market as strong candidates for beginner to intermediate level jobs. **Main Expectations:** In short, the course under reference should be delivered by professional instructors in such a robust hands-on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion. This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a market-centric approach will be adopted as the main driving force while delivering it. The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and weaknesses of each trainee to prepare them for such market roles during/after the training. i. Specially designed practical tasks to be performed by the trainees have been included in the Annexure-I to this document. The record of all tasks performed individually or in groups must be preserved by the management of the training Institute clearly labeling name, trade, session, etc so that these are ready to be physically inspected/verified through monitoring visits from time to time. The weekly distribution of tasks has also been indicated in the weekly lesson plan given in this document. ii. To materialize the main expectations, a special module on **Job Search & Entrepreneurial Skills** has been included in the latter part of this course (5th & 6th month) through which, the trainees will be made aware of the Job search techniques in the local as well as international job markets (Gulf countries). Awareness around the visa process and immigration laws of the most favored labor destination countries also form a part of this module. Moreover, the trainees would also be encouraged to venture into self-employment and exposed to the main requirements in this regard. It is also expected that a sense of civic duties/roles and responsibilities will also be inculcated in the trainees to make them responsible citizens of the country. iii. A module on **Work Place Ethics** has also been included to highlight the importance of good and positive behavior in the workplace in the line with the best practices elsewhere in the world. An outline of such qualities has been given in the Appendix to this document. Its

importance should be conveyed in a format that is attractive and interesting for the trainees such as through PPT slides +short video documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of the Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

To maintain interest and motivation of the trainees throughout the course, modern techniques such as:
- Motivational Lectures
- Success Stories
- Case Studies

These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).

Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and a proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem-solving abilities of the trainees.

(i)   Motivational Lectures

The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture. To inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A motivational lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:

- Clear Purpose to convey the message to trainees effectively.
- Personal Story to quote as an example to follow.
- Trainees Fit so that the situation is actionable by trainees and not represent a just idealism.
- Ending Points to persuade the trainees on changing themselves.

A good motivational lecture should help drive creativity, curiosity, and spark the desire needed for trainees to want to learn more.

The impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for a longer time without boredom and loss of interest because they can see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned motivational lectures as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

Course-related motivational lectures online link is available in **Annexure-II**.

(ii) Success Stories

Another effective way of motivating the trainees is using Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation, or using a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication, and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehendible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. The optimum impact is created when the story is revealed in the form of:-

- Directly in person (At least 2-3 cases must be arranged by the training institute)
- Through an audio/ videotaped message (2-3 high-quality videos must be arranged by the training institute)

It is expected that the training provider would collect relevant high-quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document.

Suggestive structure and sequence of a sample success story and its various shapes can be seen in **Annexure III**.

(iii) Case Studies

Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real-life specific problem/situation and to explore the solutions.

In simple terms, the case study method of teaching uses a real-life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes the classroom atmosphere interesting thus maintaining the trainee interest in training till the end of the course.

Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies be presented to the trainees. The trainer may adopt a PowerPoint presentation or video format for such case studies whichever is deemed suitable but only those cases must be selected that are relevant and of a learning value.

The Trainees should be required and supervised to carefully analyze the cases.

For this purpose, they must be encouraged to inquire and collect specific information/data, actively participate in the discussions, and intended solutions to the problem/situation.

Case studies can be implemented in the following ways: -

i. A good quality trade-specific documentary (At least 2-3 documentaries must be arranged by the training institute)

ii. Health &Safety case studies (2 cases regarding safety and

	industrial accidents must be arranged by the training institute) iii. Field visits(At least one visit to a trade-specific major industry/ site must be arranged by the training institute)
Entry-level of trainees	Intermediate
Learning Outcomes of the course	By the end of this course, students will be able to develop skills to convert bulk information into knowledge, and to assist the business managers in taking data driven decisions.
Course Execution Plan	The total duration of the course: **6 months (26 Weeks)** Class hours: **4 hours per day** Theory: **20%** Practical: **80%** Weekly hours: **20 hours per week (5 days a week)** Total contact hours: **520hours**
Companies offering jobs in the respective trade	Every company nowadays has huge amounts of Data, and they are in need of good analyst that can help them shape their business future.
Job Opportunities	• Big Data Engineer • Big Data Architect • Business & Data Analyst
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	● https://www.w3schools.com/ ● https://www.coursera.com/ ● https://www.towardsdatascience..com/ ● https://www.codingbat.com/ ● https://www.pythonforeverybody.com/ ● https://www.edx.org/course/big-data-analytics-2 ● https://online-learning.harvard.edu/subject/big-data ● https://www.theknowledgeacademy.com/pk/courses/big-data-and-analytics-training/#showmoreoverview50339330

MODULES

Scheduled Week	Module Title	Learning Units	Remarks
Week 1	Introduction	● **Motivational Lecture** **(** *For further detail please see Annexure: II)* ● Course Introduction ● Job market ● Course Applications ● Institute/work ethics	**TASK1** *Details may be seen at Annexure-I*
Week 2	Basic Programming in python	● **Success stories** **(** *For further detail please see Annexure: III)* ● Setup ● Syntax ● Variables ● String ● List and Arrays ● Logical operators ● Conditions ● Exercises	**TASK 2** **TASK 2A** *Details may be seen at Annexure-I*
Week 3	Basic Programming in python	● **Motivational Lecture** **(** *For further detail please see Annexure: II)* ● Loops ● Functions ● Dictionary ● Sets and Tuples ● Casting ● Lambda	**TASK 3** **TASK 3A** *Details may be seen at Annexure-I*

Week 4	Intermediate Programming in python (Flavour)	● **Success stories** (*For further detail please see Annexure: III)* ● Objects and Classes ● Files i/o ● Modules ● Json DatesMonthly test	Task4 Task 4A *Details may be seen at Annexure-I* **1st Monthly Test at end of month (Week-4)**
Week 5	Adv Microsoft Excel	● **Motivational Lecture** (*For further detail please see Annexure: II)* ● Intro to Excel Charting ● PIVOT Tables ● VLookup ● Excel Extras ● Assignment on Excel ● Case study/visit to a software house/data setup etc	TASK5 *Details may be seen at Annexure-I*
Week 6	Database Architecture	● **Success stories** (*For further detail please see Annexure: III)* ● Need of Databases ● Evolution of Relational Databases ● Different types of DBs ● Normalization vs Denormalization ● Database Lineage and Structure ● Metadata	TASK6 *Details may be seen at Annexure-I*

Week 7	Database Architecture	● **Motivational Lecture** **(** *For further detail please see Annexure: II)*
		
		● Entity Relationship Diagrams
		
		   ○ 1:many / many:1
		
		   ○ many:many
		
		● Real world ERD Examples in Class
		
		● Constraints
		
		● Industry Practices
		
		● Quiz
			TASK7
			
			Details may be seen at Annexure-I

Week 8	MySql	● **Success stories** **(** *For further detail please see Annexure: III)* ● Create, Alter, Drop ● Insert, Update, Delete, Truncate ● Practice Exercises	**TASK8** *Details may be seen at Annexure-I* **2nd** **Monthly** **Test at end** **of month** **(Week-8)**
Week 9	MySql	● **Motivational Lecture** **(** *For further detail please see Annexure: II)* ● Select, Distinct ● where (row filtering) ● Case Statements ● groupby, having ● Aggregations ● Practice Exercises	**TASK9** *Details may be seen at Annexure-I*

Week 10	MySql	● **Success stories** **(** *For further detail please see Annexure: III)* ● Joins ● String Operations and Wild Cards ● Null Functions ● Union ● Stored Procedure ● Practice Exercises and Quiz	**TASK10** *Details may be seen at Annexure-I*
Week 11	Statistics	● **Motivational Lecture** **(** *For further detail please see Annexure: II)* ● Mean, Median, Mode ● Standard Deviation and Variance ● Outliers and Quartiles ● Real world Examples	**TASK11** **TASK11A** *Details may be seen at Annexure-I*
Week 12	Statistics	● **Success stories** **(** *For further detail please see Annexure: III)* ● Seeing Relationships in Data ● Binomial Distribution ● Manipulating Normal Distribution ● Central Limit Theorem	**TASK12** *Details may be seen at Annexure-I*
	Build your CV	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) ● Add Personal Information ● Add Educational details ● Add Experience/Portfolio ● Add contact details/profile links	**TASK12A**

Week 13	Mid-Term Assignment/Exam		
Week 14	Statistics	● **Motivational Lecture** (*For further detail please see Annexure: II)* ● Correlation ● Linear Regression ● Real world problems ● Standard error and evaluating Linear Regression	**TASK13** **TASK13A** *Details may be seen at Annexure-I*
Week 15	python pandas	● **Success stories** (*For further detail please see Annexure: III)* ● Querying a Series ● The DataFrame DataStructure ● DataFrame Indexing and Loading ● Practice Exercise	**TASK14** **TASK14A** *Details may be seen at Annexure-I*
	Create an account profile on Fiverr (at least two gigs) and Upwork	Create an account by following these steps: Step 1: Personal Info Step 2: Professional Info Step 3: Linked Accounts Step 4: Account Security	**TASK14B**
Week 16	Python pandas	● **Success stories** (*For further detail please see Annexure: III)* ● Querying a DataFrame ● Indexing Dataframes ● Merging DataFrames ● PANDAS Idioms	**TASK16** *Details may be seen at Annexure-I* **3rd Monthly Test at end of month (Week-16)**

Week 17	Python pandas & Introduction to BI	● **Motivational Lecture** (*For further detail please see Annexure: II)* ● Group by ● Scales ● Pivot Tables ● Date Functionality ● BI Theory and Comparison Techniques	**TASK17** *Details may be seen at Annexure-I*
Week 18	Customer Analytics	● **Success stories** (*For further detail please see Annexure: III)* ● Customer Acquisition, re-Acquisition ● RFM Analysis ● Customer LTV ● Class Exercise	**TASK 18** *Details may be seen at Annexure-I*
Week 19	Customer Analytics	● **Motivational Lecture** (*For further detail please see Annexure: II)* ● Cohort Analysis ● Customer Segmentation based on RFM ● Geospatial Analysis (Clustering) ● Class Discussion	**TASK19** *Details may be seen at Annexure-I*
Week 20	Handson on MetaBase	● **Success stories** (*For further detail please see Annexure: III)* ● Building Dashboard ● Working with multiple Axis and scales ● Applying Filters ● Custom Queries ● Visualization Techniques	**TASK20** **TASK20A** *Details may be seen at Annexure-I* **4th Monthly Test at end of month (Week-20)**

| Week 21 | Employable Project/Assignment (6 weeks (i.e 21-26) in addition to regular classes. | ● **Motivational Lecture** **(** *For further detail please see Annexure: II)*
 ● Guidelines to the Trainees for selection of students employable project like final year project (FYP)
 ● Assign Independent project to each Trainee
 ● A project based on trainee's aptitude and acquired skills.
 ● Designed by keeping in view the emerging trends in the local market as well as across the globe.
 ● The project idea may be based on Entrepreneur.
 ● Leading to the successful employment.
 ● The duration of the project will be 6 weeks
 ● Ideas may be generated via different sites such as: <br> https://1000projects.org/
 https://nevonprojects.com/
 https://www.freestudentprojects.com/
 https://technofizi.net/best-computer-science-and-engineering-cse-project-topics-ideas-for-students/
 ● Final viva/assessment will be conducted on project assignments.
 ● At the end of session the project will be presented in skills competition
 ● The skill competition will be conducted on zonal, regional and National level.
 ● The project will be presented in front of Industrialists for commercialization | **TASK21**

 Details may be seen at Annexure-I |
| Week 22 | Data Integration on Talend | ● **Success stories** **(** *For further detail please see Annexure: III)* | |

		- Extract, Transform and Load - Theory - DataType Mapping - Errors and Difficulties faced in ETL - Guest Session by an Industry professional - Data Migration Exercise between 2 Databases	**TASK22** **TASK22A** *Details may be seen at Annexure-I*
	How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)	- Browse the following website and create an account on each website - Bayt.com – The Middle East Leading Job Site - Monster Gulf – The International Job Portal - Gulf Talent – Jobs in Dubai and the Middle East - Find the handy 'search' option at the top of your homepage to search for the jobs that best suit your skills. - Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop-down menu. - Enter any keywords you want to use to find suitable job vacancies. - On the results page you can search for part-time jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search. - Search for jobs by: - Company - Category - Location - All jobs - Agency - Industry	
Week 23	Intro to Machine	**Motivational Lecture** **(** *For further detail please see*	**TASK 23** *Details may*

	Learning (EDA)	*Annexure: II)*	*be seen at Annexure-I*
		● Variable Types	
		● Visualizing Features	
		● Handling Missing Values	
		● Probabilities and odds	
Week 24	Intro to Machine Learning (EDA)	● **Success stories** (*For further detail please see Annexure: III)*	**TASK 24** *Details may be seen at Annexure-I*
		● Outlier Detection on Pandas	
		● Introduction to Feature Engineering	
		● Handling Categories	
		● Visualizing Data using Matplotlib	
Week 25	Intro to Machine Learning (Modelling)	● **Motivational Lecture** (*For further detail please see Annexure: II)*	**TASK 25** *Details may be seen at Annexure-I*
		● Python Scikit-learn Library	
		● Classification	
		● Regression	
		● Clustering	
		● Feature Selection	
		● Evaluating Models	
		● Class Exercise	
Week 26	Entrepreneurship and Final Assessment in project	● **Success stories** (*For further detail please see Annexure: III)*	**TASK 26** *Details may be seen at Annexure-I*
		● Job Market Searching	
		● Self-employment	
		● Freelancing sites	
		● Introduction	
		● Fundamentals of Business Development	

		● Entrepreneurship ● Startup Funding ● Business Incubation and Acceleration ● Business Value Statement ● Business Model Canvas ● Sales and Marketing Strategies ● How to Reach Customers and Engage CxOs ● Stakeholders Power Grid ● RACI Model, SWOT Analysis, PEST Analysis ● SMART Objectives ● OKRs ● Cost Management (OPEX, CAPEX, ROCE etc.) ● Final Assessment	

Tasks For Certificate in Big Data Analytics

Task No.	Task	Description	Week
		Big Data Analytics Techniques	
1	**Explore Job Market**	Make presentation on job market for BigData professional	**1**
2	**Basic Python Program for Array**	Write a Python program to create an array of 5 integers and display the array items. Access individual element through indexes	**2**
2A	**Prime no finding Program**	write a program in Python to **check whether the input number is prime or not**	**2**
3	**Python Program for Loop and function etc**	Write a Python program to find those numbers which are divisible by 7 and multiple of 5, between 1500 and 2700 (both included).	**3**
3A	**Program for sum of numbers**	Write a Python function to sum all the numbers in a list. *Sample List* : (8, 2, 3, 0, 7) *Expected Output* : 20	**3**
4	**Programming for objects etc.**	Write a Python program to create an Enum object and display a member name and value. Sample data : Afghanistan = 93 Albania = 355 Algeria = 213 Andorra = 376 Angola = 244 Antarctica = 672 Expected Output : Member name: Albania Member value: 355 Write a Python program to get all values from an	**4**

Task No.	Task	Description	Week
		enum class. Expected output: [93, 355, 213, 376, 244, 672] Project :Hangman Project in Python	
4A	**JASON File**	In Python Parse a JSON File	**4**
5	**Vlookup ,PIVOT tables on Excel**	Make an assignment in which demonstrate the following a) Vlookup b) PIVOT Tables	**5**
6	**Create DB and make ERD**	Create a database in excel or mysql and then create ERD.	**6**
7	**Creating an entity-relationshp diagram**	UPS prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, UPS relies on a company-wide information system. Shipped items are the heart of the UPS product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the UPS system at a single retail center. Retail centers are characterized by their type, uniqueID, and address. Shipped items make their way to their destination via one or more standard UPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique scheduleNumber, a type (e.g, flight, truck), and a deliveryRoute. Please create an Entity Relationship diagram that captures this information about the UPS system. Be certain to indicate identifiers and cardinality constraints.	**7**

Task No.	Task	Description	Week
8	**Exercise for mysql operation**	On MySQL perform the following operations. a) Create,alter,drop,insert etc	8

9	**Perform Aggregate Functions**	• Performing calculations on multiple rows
		• Of a single column of a table
		• And returning a single value.
		
		The ISO standard defines five (5) aggregate functions namely;
		
		    12)COUNT
		      2) SUM
		      3) AVG
		      4) MIN
		      5) MAX
			9

10	**Perform multiple operations on mysql**	Perform multiple operations on ● Joins ● String Operations and Wild Cards ● Null Functions ● Union ● Stored Procedure	10
11	**Exercise and examples**	Find the variance and standard deviation of the following scores on an exam: 92, 95, 85, 80, 75, 50	11
11A	**Exercise and examples**	Find the standard deviation of the average temperatures recorded over a five-day period last winter: 18, 22, 19, 25, 12	11
12.	**Exercise and examples**	Make exercise for the ● Seeing Relationships in Data ● Binomial Distribution ● Manipulating Normal Distribution	
12A	**Build your CV**	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) • Add Personal Information • Add Educational details • Add Experience/Portfolio • Add contact details/profile links	12

Task No.	Task	Description	Week
13.	**Linear Regression (Python Implementation)**	find a linear function that predicts the response value(y) as accurately as possible as a function of the feature or independent variable(x)	14
13A	**Correlation (Python Implementation)**	Write a Program to implement correlation in python Numpy implements a corrcoef() function that returns a matrix of correlations of x with x, x with y, y with x and y with y. We're interested in the values of correlation of x with y (so position (1, 0) or (0, 1)).	
14	**Python Pandas Data Structure (Series)** 0 P 1 a 2 n 3 d 4 a 5 s dtype: object	In this code, firstly, we have imported the **pandas** and **numpy** library with the **pd** and **np** alias. Then, we have taken a variable named "info" that consist of an array of some values. We have called the **info** variable through a **Series** method and defined it in an "**a**" variable. The Series has printed by calling the **print(a)** method	15
14A	**Python Pandas DataFrame** 0 0 Python 1 Pandas	in this code, we have defined a variable named "x" that consist of string values. The DataFrame constructor is being called on a list to print the values.	
14B	**Create an account profile on Fiverr (at least two gigs) and Upwork**	Create an account by following these steps: Step 1: Personal Info Step 2: Professional Info Step 3: Linked Accounts Step 4: Account Security	
16.	**Select an Index or Column From a Pandas DataFrame**	Now, let's say you have a DataFrame like this one A B C 0 1 2 3 1 4 5 6 2 7 8 9 And you want to access the value that is at index 0, in column 'A'.	16

Task No.	Task	Description	Week
17	**Create a Pivot Table in Python using Pandas**	To start, here is the dataset to be used to create the pivot table in Python: your goal is to determine the: 1. Total sales per employee 2. Total sales by country 3. Sales by both employee and country 4. Maximum individual sale by country 5. Mean, median and minimum sales by country <table><tr><th>Name of Employee</th><th>Sales</th><th>Quarter</th><th>Country</th></tr><tr><td>Jon</td><td>1000</td><td>1</td><td>US</td></tr><tr><td>Mark</td><td>300</td><td>1</td><td>Japan</td></tr><tr><td>Tina</td><td>400</td><td>1</td><td>Brazil</td></tr><tr><td>Maria</td><td>500</td><td>1</td><td>UK</td></tr><tr><td>Bill</td><td>800</td><td>1</td><td>US</td></tr><tr><td>Jon</td><td>1000</td><td>2</td><td>Brazil</td></tr><tr><td>Mark</td><td>500</td><td>2</td><td>Japan</td></tr><tr><td>Tina</td><td>700</td><td>2</td><td>Brazil</td></tr><tr><td>Maria</td><td>50</td><td>2</td><td>US</td></tr><tr><td>Bill</td><td>60</td><td>2</td><td>US</td></tr><tr><td>Jon</td><td>1000</td><td>3</td><td>US</td></tr><tr><td>Mark</td><td>900</td><td>3</td><td>Japan</td></tr><tr><td>Tina</td><td>750</td><td>3</td><td>Brazil</td></tr><tr><td>Maria</td><td>200</td><td>3</td><td>UK</td></tr><tr><td>Bill</td><td>300</td><td>3</td><td>Brazil</td></tr><tr><td>Jon</td><td>1000</td><td>4</td><td>Japan</td></tr><tr><td>Mark</td><td>900</td><td>4</td><td>Japan</td></tr><tr><td>Tina</td><td>250</td><td>4</td><td>Brazil</td></tr><tr><td>Maria</td><td>750</td><td>4</td><td>UK</td></tr><tr><td>Bill</td><td>50</td><td>4</td><td>US</td></tr></table>	17
18	**RFM Analysis (Python implementation)**	Customer Segmentation Using RFM with Python https://www.analyticseducator.com/Blog/Customer_Segmentation_Using_RFM_with_Python.html	18
19	**work with geospatial data in Python**	Do Geospatial anaylis of Hurricane Florence data Use following website to complete this task https://www.datacamp.com/community/tutorials/geospatial-data-python	19
20	**Build a Dashboard with Python**	how to build a business dashboard in just a few minutes, using nothing but Python	

Task No.	Task	Description	Week
		Use the following website to complete this task https://anvil.works/learn/examples/dashboard	

20A	**different ways of using the filter() function in Python**	As an example, let's say we have a list of each creature in our aquarium along with different details about each of them:
		
		aquarium_creatures = [
		  {"name": "sammy", "species": "shark", "tank number": "11", "type": "fish"},
		  {"name": "ashley", "species": "crab", "tank number": "25", "type": "shellfish"},
		  {"name": "jo", "species": "guppy", "tank number": "18", "type": "fish"},
		  {"name": "jackie", "species": "lobster", "tank number": "21", "type": "shellfish"},
		  {"name": "charlie", "species": "clownfish", "tank number": "12", "type": "fish"},
		  {"name": "olly", "species": "green turtle", "tank number": "34", "type": "turtle"}
		]
		We want to filter this data by a search string we give to the function. To have filter() access each dictionary and each item in the dictionaries, we construct a nested function,
			20

21	**Project Selection**	Select the project in bigData	21
22	**Installation of Talend**	Install the software and Using open source Talend	

Task No.	Task	Description	Week
		studio ,Perform Extract, Transform and Load	

22A	**How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)**	• Browse the following website and create an account on each website
		  ▪ Bayt.com – The Middle East Leading Job Site
		  ▪ Monster Gulf – The International Job Portal
		  ▪ Gulf Talent – Jobs in Dubai and the Middle East
		• Find the handy 'search' option at the top of your homepage to search for the jobs that best suit your skills.
		• Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop-down menu.
		• Enter any keywords you want to use to find suitable job vacancies.
		• On the results page you can search for part-time jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search.
		• Search for jobs by:
		  ▪ Company
		  ▪ Category
		  ▪ Location
		  ▪ All jobs
		  ▪ Agency
		
		Industry
			22

23	**Handling Missing Values (Machine Learning)**	simulate a dataset with two predictors $x1$, $x2$, and a response variable y. We will virtually make some data missing to illustrate various reasons why many real-world datasets may contain missing values For detail please go to https://www.topbots.com/handling-missing-data-for-machine-learning/	23

Task No.	Task	Description	Week
24	**Working with Matplotlib**	Installing of Matplotlib	**24**
24A	**Data Visualizing with Matplotlib**	Create the following us Matlplotlib • Bar Graph • Pie Chart • Box Plot • Histogram • Line Chart and Subplots • Scatter Plot	**24**
25	examples illustrate the main features of the releases of scikit-learn.	Using the following website https://scikit-learn.org/stable/auto_examples/index.html#classification do the following tasks • Biclustering • Calibration • Classification • Clustering	**25**
26	**Final project**	Final project Assessment	**26**

What is freelancing and how you can make money online - BBCURDU

https://www.youtube.com/watch?v=9jCJN3Ff0kA

What Is the Role of Good Manners in the Workplace? By Qasim Ali Shah | In Urdu

https://www.youtube.com/watch?v=Qi6Xn7yKIlQ

Hisham Sarwar Motivational Story | Pakistani Freelancer

https://www.youtube.com/watch?v=CHm_BH7xAXk

21 Yr Old Pakistani Fiverr Millionaire | 25-35 Lakhs a Month Income | Interview

https://www.youtube.com/watch?v=9WrmYYhr7S0

Success Story of a 23 Year - Old SEO Expert | How This Business Works | Urdu Hindi Punjabi

https://www.youtube.com/watch?v=tIQ0CWgszl0

Failure to Millionaire - How to Make Money Online | Fiverr Superhero Aaliyaan Success Story

https://www.youtube.com/watch?v=d1hocXWSpus

Annexure-II

<u>SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.</u>

Mentor

Mentors are provided an observation checklist form to evaluate and share their observational feedback on how students within each team engage and collaborate in a learning environment. The checklist is provided at two different points: Once towards the end of the course. The checklists are an opportunity for mentors to share their unique perspective on group dynamics based on various team activities, gameplay sessions, pitch preparation, and other sessions, giving insights on the nature of communication and teamwork taking place and how both learning outcomes and the student experience can be improved in the future.

Session- 1 (Communication):

Please find below an overview of the activities taking place Session plan that will support your delivery and an overview of this session's activity.

Session- 1 OVERVIEW
Aims and Objectives:
- To introduce the communication skills and how it will work   - Get to know mentor and team - build rapport and develop a strong sense of a team   - Provide an introduction to communication skills   - Team to collaborate on an activity sheet developing their communication, teamwork, and problem-solving   - Gain an understanding of participants' own communication skills rating at the start of the program

Activity:	Participant Time	Teacher Time	Mentor Time
Intro Attend and contribute to the scheduled.			
Understand good communication skills and how it works.			
Understand what good communication skills mean			
Understand what skills are important for good communication skills			

Key learning outcomes:	Resources:		Enterprise skills developed:
Understand the communication skills and how it works.	- Podium - Projector - Computer		- Communication - Self Confidence - Teamwork

• Understand what communication skills mean • Understand what skills are important for communication skills	• Flip Chart • Marker	

Schedule	Mentor Should do
Welcome: **5 min**	Short welcome and ask the **Mentor** to introduce him/herself. Provide a brief welcome to the qualification for the class. Note for Instructor: Throughout this session, please monitor the session to ensure nothing inappropriate is being happened.
Icebreaker: **10 min**	Start your session by delivering an icebreaker, this will enable you and your team to start to build rapport and create a team presentation for the tasks ahead. The icebreaker below should work well at introductions and encouraging communication, but feel free to use others if you think they are more appropriate. It is important to encourage young people to get to know each other and build strong team links during the first hour; this will help to increase their motivation and communication throughout the sessions.
Introduction & Onboarding: **20mins**	Provide a brief introduction of the qualification to the class and play the "Onboarding Video or Presentation". In your introduction cover the following: 1. Explanation of the program and structure. (Kamyab jawan Program) 2. How you will use your communication skills in your professional life. 3. Key contacts and key information – e.g. role of teacher, mentor, and SEED. Policies and procedures (user agreements and "contact us" section). Everyone to go to the Group Rules tab at the top of their screen, read out the rules, and ask everyone to verbally agree. Ensure that the consequences are clear for using the platform outside of hours. (9am-8pm) 4. What is up next for the next 2 weeks ahead so young people know what to expect (see pages 5-7 for an overview of the challenge). Allow young people to ask any questions about the session topic.
Team Activity Planning: **30 minutes**	MENTOR: Explain to the whole team that you will now be planning how to collaborate for the first and second collaborative Team Activities that will take place outside of the session. There will not be another session until the next session so this step is required because communicating and making decisions outside of a session requires a different strategy that must be agreed upon so that everyone knows what they are doing for this activity and how. • "IDENTIFY ENTREPRENEURS" TEAM ACTIVITY • "BRAINSTORMING SOCIAL PROBLEMS" TEAM

	ACTIVITY" *As a team, collaborate on a creative brainstorm on social problems in your community. Vote on the areas you feel most passionate about as a team, then write down what change you would like to see happen.* Make sure the teams have the opportunity to talk about how they want to work as a team through the activities e.g. when they want to complete the activities, how to communicate, the role of the project manager, etc. Make sure you allocate each young person a specific week that they are the project manager for the weekly activities and make a note of this. Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.
Session Close: **5 minutes**	**MENTOR:** Close the session with the opportunity for anyone to ask any remaining questions. **Instructor:** Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.

MOTIVATIONAL LECTURES LINKS.

TOPIC	SPEAKER	LINK
Informatica CEO: The Business Of Big Data	CEO	https://www.youtube.com/watch?v=CONitz2n68w
Taking On Big Data	Talend CEO	https://www.youtube.com/watch?v=8jB_1-P7qV4
How to Face Problems In Life	Qasim Ali Shah	https://www.youtube.com/watch?v=OrQte08Ml90
How To Prepare For Applying Freelancing Jobs For Data Science	Krish Naik	https://www.youtube.com/watch?v=EXbMZGjswjI
Big Data and AI in Small Business	Bernard Marr	https://www.youtube.com/watch?v=hYoRMqkN_TI
Just Control Your Emotions	Qasim Ali Shah	https://www.youtube.com/watch?v=JzFs__yJt-w
How to Communicate Effectively	Qasim Ali Shah	https://www.youtube.com/watch?v=PhHAQEGehKc
Your ATTITUDE is Everything	Tony Robbins Les Brown David Goggins Jocko Willink Wayne Dyer Eckart Tolle	https://www.youtube.com/watch?v=5fS3rj6eIFg
Control Your EMOTIONS	Jim Rohn Les Brown TD Jakes Tony Robbins	https://www.youtube.com/watch?v=chn86sH0O5U
Defeat Fear, Build Confidence	Shaykh Atif Ahmed	https://www.youtube.com/watch?v=s10dzfbozd4
Wisdom of the Eagle	Learn Kurooji	https://www.youtube.com/watch?v=bEU7V5rJTtw
The Power of ATTITUDE	Titan Man	https://www.youtube.com/watch?v=r8LJ5X2ejqU
STOP WASTING TIME	Arnold Schwarzenegger	https://www.youtube.com/watch?v=kzSBrJmXqdg
Risk of Success	Denzel Washington	https://www.youtube.com/watch?v=tbnzAVRZ9Xc

Annexure-III

<p align="center"><u>SUCCESS STORY*</u></p>

S. No	Key Information	Detail/Description
1.	**Self & Family background**	Mr Usman is a computer Engineering graduate from UET with distinction and also a founder of DsPortal (A Data Science Growth Platform). He has 5+ years of experience in providing IT training and has been attached to key institutes since then. He holds a master in data science and has 3 international publications in Machine Learning/Data Science **If at first, you don't succeed, try try again**
2.	**How he came on board NAVTTC Training/ or got trained through any other source**	Form UET(NAVTTC partner institute)
3.	**Post-training activities**	Usman area of expertise is in **Big Data**. In his first month using Fiverr, he pitched mostly for projects centered around logo designing. But it wasn't so simple. In the first few weeks, he didn't hear back from even a single client, despite pitching for dozens of projects. "I needed to understand what worked, so I read blogs, participated in forums, and analyzed profiles of successful freelancers. It was an uphill struggle, but I didn't want to give up," he explains. Usman says he understands why clients would be apprehensive giving projects to untested freelancers. They have hundreds of options to choose from, he explains, and to give a project to someone with no experience requires a strong leap of faith. A slow stream of projects started to come Usman way. Within a few months, he was landing an average of a hundred projects every month, with a large number of repeat clients. He also expanded the range of his professional services, Mirpur, threatened to derail his freelancing career. "Sometimes I haven't had connectivity for two days straight," he explains. "That's unthinkable for someone who makes his livelihood on the internet."

4.	**Message to others** **(under training)**	Take the training opportunity seriously Impose self-discipline and ensure regularity Make Hard work pays in the end so be always ready for the same.

*Example pattern

Note: Success story is a source of motivation for the trainees and can be presented in several ways/forms in a NAVTTC skill development course as under: -

1. To call a passed out successful trainee of the institute. He will narrate his success story to the trainees in his own words and meet trainees as well.
2. To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful trainee Audio-video recording that has to cover the above-mentioned points.*****
3. The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning, etc) and narrates his/her story in the teacher's own motivational words.

* *The online success stories of renowned professional can also be obtained from **Annex-II***

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **Attendance:**

   Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **Character:**

   Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **Team Work:**

   The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. **Appearance:**

   Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. **Attitude:**

   Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **Productivity:**

   Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **<u>Organizational Skills</u>:**

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **<u>Communication</u>:**

Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

9. **<u>Cooperation</u>:**

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. **<u>Respect</u>:**

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.