

Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"



Course Contents / Lesson Plan

Course Title: Computer Vision

Duration: 6 Months

Revised Edition

Trainer Name	
Course Title	Computer Vision
Objectives and Expectations	<p>Employable skills and hands-on practice for Computer Vision</p> <p>Computer vision is concerned with modeling and replicating human vision using computer software and hardware. Formally if we define computer vision then its definition would be that computer vision is a discipline that studies how to reconstruct, interrupt and understand a 3d scene from its 2d images in terms of the properties of the structure present in scene.</p> <p>It needs knowledge from the following fields in order to understand and stimulate the operation of human vision system.</p> <ul style="list-style-type: none"> • Computer Science • Electrical Engineering • Mathematics • Physiology • Biology • Cognitive Science <p><u>Main Expectations:</u></p> <p>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.</p> <p>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.</p> <ol style="list-style-type: none"> 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. To materialize the main expectations, a special module on <u>Job Search & Entrepreneurial Skills</u> 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 by means of 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 comprehensible 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's 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

	<p>cases.</p> <p>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.</p> <p>Case studies can be implemented in the following ways: -</p> <ol style="list-style-type: none"> A good quality trade-specific documentary (At least 2-3 documentaries must be arranged by the training institute) Health & Safety case studies (2 cases regarding safety and industrial accidents must be arranged by the training institute) Field visits(At least one visit to a trade-specific major industry/ site must be arranged by the training institute)
Entry-level of trainees	Bachelors
Learning Outcomes of the course	<p>Upon completion of this course, the trainees will be able to:</p> <ul style="list-style-type: none"> • Apply engineering drawing techniques for the correct graphical representation of components of images and videos • Use OpenCV in Python • Write python scripts to process images and vidoes • Write Python scripts to analyze frequency components in images • Detect edges in images in python • Apply Fourier transform to images • Apply convolution theorem to images • Detect objects in an image using python

Course Execution Plan	<p>Total Duration of Course: 6 Months (26 Weeks)</p> <p>Class Hours: 4 Hours per day</p> <p>Theory: 20% Practical: 80%</p> <p>Weekly Hours: 20 Hours Per week</p> <p>Total Contact Hours: 520 Hours</p>
Companies offering jobs in the respective trade	<ol style="list-style-type: none"> 1. NU tech 2. Yari.com 3. Null brainer 4. KICS, UET 5. LozpData Software Development Company 6. Grafix360 7. Mentor Graphics 8. PowerSoft19 9. MaxSoft
Job Opportunities	<ul style="list-style-type: none"> • Computer vision is the technology that allows the digital world to interact with the real world. • Following are the applications of Computer Vision <ul style="list-style-type: none"> ◦ Pose Estimation using Computer Vision ◦ Image transformation using Gans ◦ Computer Vision for developing Social distancing tools ◦ Converting 2D images into 3D models ◦ Medical Image analysis <p>Many of the use cases of computer vision fall into the following clusters:</p> <ul style="list-style-type: none"> • Retail and Retail Security • Automotive • Healthcare • Agriculture • Banking • Industrial
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	<p>Development Platform:</p> <ul style="list-style-type: none"> • https://www.tutorialspoint.com/dip/computer_vision_and_graphics.htm • https://www.tutorialspoint.com/opencv/index.htm <p>Learning Material:</p> <ul style="list-style-type: none"> • Computer Vision: Algorithms and Applications, 2010. • Computer Vision: Models, Learning, and Inference, 2012. • Computer Vision: A Modern Approach, 2002. • Introductory Techniques for 3-D Computer Vision, 1998. • Multiple View Geometry in Computer Vision, 2004.

MODULES

Scheduled Week	Module Title	Learning Units	Remarks
Week 1	Introduction to Computer Vision	Motivational Lecture (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • Course Introduction • Success stories • Job market • Course Applications • Institute/work ethics • What is Computer Vision? • Examples and applications of Computer Vision 	Home Assignment <ul style="list-style-type: none"> • Task 1 • Task 2 <p><u>Details may be seen at Annexure-I</u></p>
Week 2	Module -1 Chapter 1 Digital Image Processing Introduction	Success stories (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • Introduction to Digital Image Processing • Analog image processing • Digital image processing • What is an image • Relationship between a digital image and a signal 	<ul style="list-style-type: none"> • Task 3 <p><u>Details may be seen at Annexure-I</u></p>
Week 3	Chapter 2 Signals and Systems Introduction	Motivational Lecture (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • Analog Signals • Digital Signals • Analog to Digital Conversion • Continuous vs Discrete Systems 	<ul style="list-style-type: none"> • Task 4 <p><u>Details may be seen at Annexure-I</u></p>
Week 4	Chapter 3 History of Photography	Success stories (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • History of Camera • Origin of Photography • Origin of films 	<ul style="list-style-type: none"> • Task5 <p><u>Details may be seen at Annexure-I</u></p>
Week 5	Chapter 4 Applications of Digital Image Processing	Motivational Lecture (<i>For further detail please see Page No: 3& 4</i>)	<ul style="list-style-type: none"> • Task6 <p><u>Details</u></p>

		<ul style="list-style-type: none"> • Image Sharpening and Restoration • UV Imaging • Transmission and Encoding • Robot Vision • Installing Virtual box and ubuntu 	<u>may be seen at Annexure-I</u>
Week 6	Chapter 5 Getting started with OpenCV in python	<ul style="list-style-type: none"> • Introduction to OpenCV • Installing OpenCV • Installing Python • Environment Setup: Preparing your Computer 	<ul style="list-style-type: none"> • Task7 <u>Details may be seen at Annexure-I</u>
Week 7	Chapter 5 Python Basics	<ul style="list-style-type: none"> • Assignment • Flow Control • Data Structures • Functions 	<ul style="list-style-type: none"> • Task8 <u>Details may be seen at Annexure-I</u>
Week 8	Module 2 Chapter 1 Concept of Dimensions	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Dimension of Images • Dimension of Signals • Working on Dimensions of image in openCV 	<ul style="list-style-type: none"> • Task9 <u>Details may be seen at Annexure-I</u>
Week 9	Chapter 2 Camera Mechanism	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Image Formation on Camera • Concept of a pixel 	<ul style="list-style-type: none"> • Task 10 <u>Details may be seen at Annexure-I</u>
Week 10	Chapter 3 Concept of Bits Per Pixel	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Bits in Mathematics • Number of Different Colors • Shades • Controlling Bits per pixel in openCV 	<ul style="list-style-type: none"> • Task 11 <u>Details may be seen at Annexure-I</u>
Week 11	Chapter 4 Color Codes Conversion	Motivational Lecture (For further detail please see Page No: 3& 4)	<ul style="list-style-type: none"> • Task 12 <u>Details may be</u>

		<ul style="list-style-type: none"> • Different color codes • Binary color format • RGB Color Model • CMYK Color Model • Changing Color Codes in openCV 	<u>seen at Annexure-I</u>
Week 12	Chapter 5 Concept of Sampling	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Conversion of analog signal to digital signal • Sampling • Relationship with pixels • Performing Sampling in OpenCV 	<ul style="list-style-type: none"> • Task 13 <u>Details may be seen at Annexure-I</u>
Week 13	Chapter 2 Pixel Resolution	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • MegaPixels • Aspect Ratio • Concept of zooming • Zooming Methods • Performing Pixel resolution in openCV 	<ul style="list-style-type: none"> • Task 14 <u>Details may be seen at Annexure-I</u>
Week 14	Chapter 3 Pixel Resolution (Continued...)	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Spatial Resolution • Pixel Dots • Line per inch • Gray Level Resolution 	<ul style="list-style-type: none"> • Task 15 <u>Details may be seen at Annexure-I</u>
Week 15	Chapter 4 Quantization	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Digitizing a signal • Reducing Gray Level • Contouring • Quantization using openCV 	<ul style="list-style-type: none"> • Task 16 <u>Details may be seen at Annexure-I</u>
Week 16	Module 4 Chapter 1 Concept of Dithering	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> • Dithering • Dithering with quantization • Dithering in openCV 	<ul style="list-style-type: none"> • Task 17 <u>Details may be seen at Annexure-I</u>
Week 17	Mid-Term Assignment		

Week 18	Module 5 Chapter 1 Image Transformations	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> Transformation Digital Image Processing system Image transformation Image Transformation in OpenCV 	<ul style="list-style-type: none"> Task 18 <p><u>Details may be seen at Annexure-I</u></p>
Week 19	Chapter 2 Histograms	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> Histograms Introduction Histogram sliding Histogram Stretching Histogram Equalization Working with histograms in OpenCV 	<ul style="list-style-type: none"> Task 19 <p><u>Details may be seen at Annexure-I</u></p>
Week 20	Module 6 Chapter 1 Gray Level Transformation	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> Image enhancement Gray level transformation Linear transformation Negative Transformation Log Transformation Power Law Transformation Performing gray level transformation in openCV 	<ul style="list-style-type: none"> Task 20 <p><u>Details may be seen at Annexure-I</u></p>
Week 21	Module 7 Chapter 1 Concept of Convolution	Success stories (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> Concept of Mask Examples of convolution Perform convolution in openCV 	<ul style="list-style-type: none"> Task 21 <p><u>Details may be seen at Annexure-I</u></p>
Week 22	Chapter 2 Concept of Edge Detection	Motivational Lecture (For further detail please see Page No: 3& 4) <ul style="list-style-type: none"> Edge Detection Prewitt Operator Sobel Operator Perfrom edge detection in openCV 	<ul style="list-style-type: none"> Task 17A <p><u>Details may be seen at Annexure-I</u></p> <ul style="list-style-type: none"> Class Presentation

Week 23	Employable Project/Assignment (6 weeks i.e. 21-26) besides regular classes. OR On the job training (2 weeks)	<ul style="list-style-type: none"> 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 successful employment. The duration of the project will be 6 weeks Ideas may be generated via different sites such as: 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 the session, the project will be presented in a skills competition The skill competition will be conducted on zonal, regional, and National levels. The project will be presented in front of Industrialists for commercialization The best business idea will be placed in the NAVTTC business incubation center for commercialization. <p style="text-align: center;">OR</p> <p>On the job training for 2 weeks:</p> <ul style="list-style-type: none"> Aims to provide 2 weeks of industrial training to the Trainees as part of the overall training program Ideal for the manufacturing trades As an alternative to the projects that involve expensive equipment Focuses on increasing Trainee's motivation, productivity, efficiency, and quick learning approach. 	
Week 24	Chapter 4 Concept of Edge Detection (Continued)	Motivational Lecture (<i>For further detail please see Page No: 3& 4</i>)	Home assignment

		<ul style="list-style-type: none"> • Robinson Comapss method • Krisch Compass Method • Laplacian operator • Perform edge detection in openCV 	
Week 25	Module 8 Chapter 1 Frequency domain analysis	Success stories (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • Difference between spatial domain and frequency domain • Frequency components • Finding low and high frequency components of image in OpenCV • Fourrier Series • Fourrier Transform • Convolution Theorem • Using Forrier Series in openCV 	<ul style="list-style-type: none"> • Task 18 <p><u>Details may be seen at Annexure-I</u></p>
Week 26	Entrepreneurship and Final Assessment in project	Success stories (<i>For further detail please see Page No: 3& 4</i>) <ul style="list-style-type: none"> • 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 Computer Vision

Task No.	Task	Description	Week
1	Search Job Market	<ul style="list-style-type: none">• Search computer vision jobs available in Pakistan• Enlist at least five videography job titles	Week 1
2	Learn Ethics	Prepare a list of your values and prioritize the top 10 values	
3	Image Processing Software	Search Different image processing software online. Make a list of them and identify the features it provides. Afterwards identify their pros and cons	Week 2
4	Analog to digital conversion	Enlist different file formats of analog and digital images and videos. Enlist analog to digital video/image converter softwares and their properties.	Week 3
5	Presentation on history of Photography	Prepare a presentation on history of photography	Week 4
6	Application of Digital Image Processing	Prepare a presentation on applications of digital image processing Install Virtual box and Ubuntu and configure the settings.	Week 5
7	Installing OpenCV	<ul style="list-style-type: none">• Install OpenCV and python on given machine• Install required libraries if any.	Week 6

8	Programming in Python	a. Write a Python program to find those numbers which are divisible by 7 and multiple of 5, between 1500 and 2700 (both included). b. Write a Python function to find the Max of three numbers	Week 7
9	Write Python script to load image	Write a python program to load and save images.	Week 8
10	Write Python script to find dimensions of image	Write a python program to find following dimensions of any image: a. Image Dimension b. Image Height c. Image Width d. Number of Channels	Week 9
11	Write Python script to find pixels of an image	Write a python program to find bits per pixel of any image.	Week 10
12	Write Python script to find pixels of an image	Write a python program to change colorspace of any image.	Week 11
13	Find object in an image	Write a python script to find an object from an image.	Week 12
14	Access and modify pixels of an image	Write a python script to access and modify pixels in an image.	Week 13
14A	Build your CV	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) <ul style="list-style-type: none"> • Add Personal Information • Add Educational details • Add Experience/Portfolio • Add contact details/profile links 	Week 13

15	Change grayscale resolution of images	Write a python script to change grayscale resolution of given images.	Week 14
15A	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	Week 14 onwards
16	Quantization on images	Write a python script to perform quantization on given images.	Week 15

17	Image Dithering	Write a python script perform Image dithering.	Week 16
17A	How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)	<ul style="list-style-type: none"> Browse the following website and create an account on each website <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Company Category Location All jobs Agency Industry 	Week 20 onwards
18	Image Transformation	Write a python script to perform geometric transformation on an image.	Week 18
19	Histogram Equalization	Write a python script to perform Histogram Equalization on an image.	Week 19
20	Log Transformation	Write a python script to perform Log transformation on an image.	Week 20
21	Convolution	Write a python script to perform convolution on an image	Week 21
22	Edge Detection	Write a python script to perform edge detection on an image using sobel and prewitt operator.	Week 22
23	Edge detection	Write a python script to perform edge detection on an image using robinson operator.	Week 23
24	Edge Detection	Write a python script to find edges in an image using Krisch Compass Method.	Week 24

25	Fourrier Transform	Apply Fourier Transform on an image in python	Week 25
26	Build your CV	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) <ul style="list-style-type: none"> • Add Personal Information • Add Educational details • Add Experience/Portfolio Add contact details/profile links	Week 26

Computer Vision

Success story of Vishnu Vardhan - Fresher to a Computer Vision Engineer

<https://www.youtube.com/watch?v=nBkKK8IZMfY&t=6s>

Success Story of Rishabh Rao: Fresher to a Machine Learning Engineer(Computer Vision)

<https://www.youtube.com/watch?v=aT1GrZVVmq4>

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

<https://www.youtube.com/watch?v=Qi6Xn7yKIIQ>

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

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

Hisham Sarwar Motivational Story | Pakistani Freelancer

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

Annexure-II

SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.

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:
<ul style="list-style-type: none">• 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:

<ul style="list-style-type: none"> • Understand the communication skills and how it works. • Understand what communication skills mean • Understand what skills are important for communication skills 	<ul style="list-style-type: none"> • Podium • Projector • Computer • Flip Chart • Marker 	<ul style="list-style-type: none"> • Communication • Self Confidence • Teamwork
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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: <ol style="list-style-type: none"> 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

	<p>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.</p> <ul style="list-style-type: none"> • “IDENTIFY ENTREPRENEURS” TEAM ACTIVITY • “BRAINSTORMING SOCIAL PROBLEMS” TEAM ACTIVITY <p><i>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.</i></p> <p>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.</p> <p>Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.</p>
<p>Session Close: 5 minutes</p>	<p>MENTOR: Close the session with the opportunity for anyone to ask any remaining questions.</p> <p>Instructor: Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.</p>

MOTIVATIONAL LECTURES LINKS.

TOPIC	SPEAKER	LINK
How to Face Problems In Life	Qasim Ali Shah	https://www.youtube.com/watch?v=OrQte08MI90
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=s10dzfbzdz4
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

SUCCESS STORY

S. No	Key Information	Detail/Description
1.	Self & Family background	<p>Prof. Dr. Ghalib Asadullah Shah-who lives in Lahore, is an example of discipline, commitment, hard work, and dedication- currently serving as Head of Department of Computer Engineering at University of Engineering and Technology, started his journey from a small town in Multan. His primary and secondary education was far below the average student. However, his efforts and hard work proved to be fruitful as he got admission at UET Lahore in 1997.</p> <p>Mr. Ghalib started his career as Project Assistant Engineer in 2001 after completing Engineering Degree. Later he joined KICS as a Researcher in 2003. In 2006, he added a feather in his cap by winning a Full bright MS leading to a Ph.D. (Computer Vision) scholarship at the University of Nottingham UK. Returned to Pakistan in 2011 and Joined KICS again. Started working on Computer Vision based projects. Promoted as Professor in 2017 with the additional assignment as HOD of Department of Computer Engineering. He quotes Winston S. Churchill:</p> <p><i>"Success is not final; failure is not fatal: It is the courage to continue that counts."</i></p>
2.	How he came on board NAVTTC Training/ or got trained through any other source	<p>"I was introduced by Engr. Liaquat Jamro to NAVTTC platform in 2012" said Dr. Ghalib.</p> <p>He has contributed to a number of his field related qualifications and training despite a tough schedule and currently conducting PM Kamyab Jawan short courses successfully.</p>
4.	Message to others (under training)	<ul style="list-style-type: none"> • Take the training opportunity seriously • Impose self-discipline and ensure regularity • Hard work pays in the end so be always ready for the same.

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. Organizational Skills:

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. Communication:

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

9. Cooperation:

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. Respect:

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.