Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"

Course Contents/ Lesson Plan

Course Title: Wastewater Treatment Technician (WWTT)

Duration: 6 Months

Revised Edition

Trainer Name	Dr. Hifza Rasheed, Principal, National Capacity Building Institute (NCBI); Director (Water Quality), Pakistan Council of Research in Water Resources (PCRWR), Islamabad.
Course Title	**Wastewater Treatment Technician (WWTT)**
Objectives and Expectations	**Employable skills and hands on practice for water and wastewater treatment process** Water is an essential factor for life and nothing can stay alive without it. In Pakistan, domestic and industrial wastewater is either discharged directly to a sewer system, a natural drain or water body, a nearby field or an internal septic tank. Mostly, this wastewater is not treated and none of the cities have any biological treatment process except Islamabad and Karachi, and even these cities treat only a small proportion (<8%) of their wastewater before disposal. Considering the need to address the disposal of untreated wastewater in the country and intense need to recycle this wastewater to overcome water shortage, this course is planned. The aim of this course is to introduce the advanced processes and technologies for wastewater treatment and its reuse. This course is designed to address the professional needs of those interested in entering the water treatment and wastewater treatment industry. This program emphasizes hands-on experience and is designed to provide a progressive credential structure through which students can gain knowledge about testing to ensure the quality of water and treatment methods for water and wastewater. It will also develop the participant's ability to act in a professional and responsible manner. Course provides an opportunity to build a professional career in the field of wastewater testing and treatment to meet the needs of industrial sector, water and sanitation agencies, environmental organizations etc. working for safe waste disposal and zero liquid discharge (ZLD) to reduce impacts on water resources and its utilization for energy production. The course starts from basic level and then move towards the advance level i.e. starting from introduction of wastewater categories, contaminants, implications, testing and understanding primary, secondary and tertiary wastewater treatment methods as well as bioremediation, packaged systems etc. This course will cover the different

wastewater treatment techniques/process, technology and designs, field and laboratory testing.

Main Expectations:

In short, the course under reference should be delivered by professional instructors in such robust hands-on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion, where's hands on practice are not valid than demonstration will be required through video contents/ project prototype.

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 individual trainee to prepare them for such market roles during/after the training.

1. 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.

2. In order to materialize the main expectations, a special module on **Job Search & Entrepreneurial Skills** has been included in the later 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 favoured labour destination countries also forms 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.

3. A module on **Workplace Ethics** has also been included to highlight the importance of good and positive behavior at work place 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 Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

In order 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 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.

1. 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:

1. Clear Purpose to convey message to trainees effectively.
2. Personal Story to quote as an example to follow.
3. Trainees Fit so that the situation is actionable by trainees and not represent a just idealism.
4. 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.

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 longer time without boredom and loss of interest because they can clearly 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.

5. 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 by means of 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. Optimum impact is created when the story is revealed in the form of:-

1. Directly in person (At least 2-3 cases must be arranged by the training institute)
2. 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 at annexure III.

3. 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 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 to be presented to the trainees. The trainer may adopt a power point presentation or video format for such case studies whichever is deemed suitable but it's important that only those cases are selected that are relevant and of a learning value.

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

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

Case studies can be implemented in the following ways: -

1. A good quality trade specific documentary (At least 2-3 documentaries must be arranged by the training institute)
2. 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	Since intake level is Matriculation/FSC/DAE, the expectations from the trainees are: • To have basic knowledge of chemistry, biology, mathematics and/or physics. • Academic skills in reading and writing • Knowledge of water and wastewater quality and treatment requirements • To have concept of current environmental issues including water pollution, wastewater generation, climate change etc.
Learning Outcomes of the course	**<u>Main Expectation</u>** By the end of this course, the trainees should gain the following competencies: • Perform the wastewater samples collection, field and laboratory testing • Preparation of solution and reagent preparation involved in wastewater testing • Demonstrate wastewater chemistry and biology • Application of knowledge of chemistry, microbiology, mathematics, instrumentation and treatment technologies in sewage recycling. • Demonstrate primary, secondary and advanced treatment process and design requirements • Operate and maintain water-treatment, distribution and reuse • Understand environmental laws, occupational health and safety, communications, and utility management. • Demonstrate groundwater investigation • Demonstrate drinking water treatment technologies • Understand the concepts of national water & sanitation policy and sustainable development goals • Demonstrate different type of water/wastewater sampling methodologies

	• Perform testing for physico-chemical and wastewater parameters • Perform efficiency evaluation of wastewater treatment techniques and technologies and compliance to the NEQS standards **Water/Wastewater sampling** • Design a workable sampling and analysis plan • Perform Field Equipment Decontamination methods • Perform Quality Assurance/Quality Control for Field Sampling & Analysis Programs • Calibrate Surface Water Sampling Devices • Calibrate Sediment Sampling Devices • Undertake sampling, preservation and transport of samples considering representativeness and integrity **Laboratory testing of wastewater** • Design the laboratory analysis plan for water quality monitoring project • Select Spatial and temporal monitoring criteria • Calibrate Turbidity meter, Electrical Conductivity meter, pH meter, Dissolved Oxygen meter, Chemical and biochemical oxygen testing instruments, Flame Photometer, and Spectrophotometer, and Colorimeter. • Perform testing using standard methods • Report the quality of wastewater before and after treatment **Quality Control Checks** • Demonstrate calibration verification process • Develop control charts of all test parameters • Determine method detection limits • Prepare the quality control samples • Calculate percent recoveries of test parameters • Perform test methods validation

	• Perform volume deliveries checks • Calculate uncertainty of test parameters **Wastewater treatment processes** • Identify the characteristics of different types of wastewater such as COD, BOD, TSS, DO, Flow and discharge • Understands the biology and chemistry of wastewater treatment process • Understand the design and operation of the constructed wetlands • Identify major components and processes of sewage treatment system. • Understand the Screening and pumping, grit removal, primary settling, aeration / activated sludge, secondary settling, filtration, disinfection, and oxygen uptake. • Estimate the treatment efficiency by testing the influents and effluents • Maintain items of equipment used in wastewater treatment process • Identify the application of treated wastewater • Comparison of wastewater treatment processes • Measure flow discharge of stream or lake • Treatment processes involved in treatment techniques **Wastewater treatment technologies** • Understand and demonstrate the sewage treatment plant • Demonstrate the sewage treatment using the constructed wetlands • Understand the sludge removal process • Understand the Advanced oxidation process. • Demonstrate the disinfection of wastewater • Explain the operation of bio-digesters

	Job Searching • Analyze job in local market • CV building as per job demand • Analyze job demand in any two-international country • Jobs Applying procedure in any two-international country **Entrepreneurship** • Analyze customer demand • Perform cost analysis of customer demand • Conduct market survey for project estimation • Prepare quotation for customer • Negotiate with customer • Deal with customer and signed MOU • Prepare quotations/ invoice report • Complete the Work done on site **Soft skills /Teamwork/professionalism** • Develop professionalism • Motivational Lectures • Success Stories • Develop work ethics • Follow teamwork environments principals • Ensure punctuality of time • Ensure job deliverable within assigned time frame • Show dedication and commitment with your duty • Be creative in your work • Ensure positive attitude in group task • Ensure willing worker attitude in teamwork • Be goal oriented • Ensure HSE SOPs • Obey organizational rules and regulations

	• Be loyal with your duty and organization • Honesty is best policy
Course Execution Plan	Total duration of course: **6 months (24 Weeks)** Class, Lab and Field hours:**5 hours per day** Theory:**20%** Practical: **80%** Weekly hours: **25 hours per week** Total contact hours: **600 hours**
Companies offering jobs in the respective trade	**<u>Companies Offering Jobs in the respective trade</u>** 1. Water and sanitation agencies 2. Water supply agencies 3. Government Organizations 4. All Private Institutes who want to recycle and reuse of wastewater 5. Companies involved in water treatment business 6. NGOs and UN Organizations working on WASH programmes 7. Environmental agencies 8. Bottled Water Industries 9. Beverage Industries 10. Food, pharmaceutical and textile industries 11. Pharmaceutical companies 12. Drinking and Sewage treatment plants
Job Opportunities/ job titles	Industries, Water and sanitation agencies, environmental agencies, industries and private water treatment companies need qualified technicians to monitor the quality of effluents and support the process of water and wastewater treatment to ensure that wastewater is safely converted into a form that can either be reintroduced into the water cycle or reused to meet the water scarcity. Water and wastewater treatment agencies have complex system of machinery and control boards to operate, maintain, troubleshoot and monitor water treatment plants and their associated processes. The wastewater testing skills and demonstration processes involved in water and wastewater treatment technologies will enable the diploma holders to work as water treatment plant operator as they are possessing excellent
No of Students	25
Learning Place	Classroom/ Lab/field/wastewater treatment sites

Instructional Resources	**Development Platform:** • National Water Quality Laboratory • National Capacity Building Institute • Demonstration models for water and wastewater treatment • Field visits to water and wastewater treatment plants **Learning Material:** • Books and manual on water and wastewater treatment process • American Public Health Association APHA AWWA WEF Standard Methods for the Examination of Water and Wastewater, 23rd Edition • https://www.mabarex.com/wp-content/uploads/2018/07/wwt-technologies-chart-1.pdf • In-house modules developed on wastewater testing and treatment technologies

Course Outline (Module)

Scheduled Week	Module Title	Learning Units	Remarks
Week 1	**Module-I:** Water Quality Introduction and Requirements **& Motivational Lecture**	• Motivational Lecture • Course Introduction • Success stories • Job market • Course Applications • Institute/work ethics • Water Quality basics and requirements	**Home Assignment** **Task 1** Details may be seen at Annexure-I
	Module-II: Wastewater Testing	• Introduction to Wastewater testing • Guidelines for sampling, storage and preservation • Determination of dissolved oxygen • Determination of chemical oxygen demand • Determination of bio-chemical oxygen demand • Determination of Total suspended solids • Evaluation of test results	
Week 2	**Module-IV:** Wastewater Treatment Design & Technologies	**Introduction** • Aspects of wastewater treatment • Wastewater characterization and its • Importance • Types of treatment • General flow diagram for wastewater treatment plant • Site selection for wastewater treatment plants • CSTR	**Task 2** **Task 3** Details may be seen at Annexure-I **Monthly Test 1**
	Module V: Applied Mathematical Concepts	• Mathematical Foundations • Mathematical Notation, Symbols and • Operators • Fractions • Percentages • Equations and Functions • Graphs Algebra	
Week 3	**Module-III:** Wastewater Treatment Process and **Motivational Lecture**	**Introduction** • Aims of wastewater treatment • Biological treatment processes • Chemical treatment processes	**Task 4** Details may be

	Module-IV: Wastewater Treatment Design & Technologies	**Preliminary & Primary Wastewater Treatment** • Screens design • Grit chamber theory and design • Comminutor • Septic tank design • Primary sedimentation tank design	seen at Annexure-I **Monthly Test 1**
Week 4	**Module V:** Applied Mathematical Concepts	• Rearranging Equations • Physical quantities, Units and • Conversions • Exponentials • Logarithms • Quadratics • Differentiation • Integration	**Task 5** **Task 6** **Task 7** Details may be seen at Annexure-
	Module-III: Wastewater Treatment Process	**Water and Wastewater Treatment in Pakistan** • Water availability and Use from Pakistan's Perspective • Wastewater Treatment	
	Module-IV: Wastewater Treatment Design & Technologies	**Secondary Treatment (Biological)** • Waste stabilization ponds • Aerated lagoons • Activated sludge process • Trickling filters	
Week 5	**Module-III:** Wastewater Treatment Process	**Main Parameters Defining the Quality of Wastewater** • Preliminaries • Solids • Carbonaceous Organic Matter • Biochemical Oxygen Demand (BOD) • Ultimate Biological Oxygen Demand • (BODu) • Chemical Oxygen Demand (COD) • Total Organic Carbon (TOC)	Details may be seen at Annexure-I **Task 8** **Task 9** **Task 10** Details may be seen at Annexure-I
	Module-IV: Wastewater Treatment Design & Technologies	**Secondary Treatment (Biological)** • Rotating biological contactors • Up flow anaerobic sludge blanket • Sequential Batch reactor	
Week 6	**Module-III:** Wastewater Treatment Process	**Overview of Wastewater Treatment Systems** • Wastewater Treatment Levels • Wastewater Treatment Operations • Processes and Systems • Preliminary Treatment • Primary Treatment • Secondary Treatment	**Task 11** **Task 12** Details may be seen at Annexure-I Details may be seen at Annexure-I
	Module-IV: Wastewater Treatment Design & Technologies	**Tertiary Treatment (Biological)** • Biological nitrification and denitrification • Treatment technologies used for	

		nitrification and denitrification • Biological phosphorus removal • Treatment technologies used for biological phosphorus removal	
Week 7	**Module-III:** Wastewater Treatment Process **and Motivational Lecture**	**<u>Wastewater Treatment Technologies</u>** • Sewage Treatment Plant (STP) • Understanding the STP Stages • Bar Screen Chamber • Oil and Grease/Grit Trap • Equalization Tank • Raw Sewage Lift Pumps • Aeration Tank • Secondary Clarifier/ Settling Tank • Sludge Recirculation • Clarified Water Sump • Filter Feed Pumps (FFP) • Pressure Sand Filter (PSF) • Activated Carbon Filter (ACF) • Disinfection of Treated Water • Excess Sludge Handling	**Task 13** **Task 14** <u>Details may be seen at Annexure-I</u>
	Module-IV: Wastewater Treatment Design & Technologies	**<u>Sludge Management</u>** • Sludge management techniques • Sludge digester • Design of drying beds	
Week 8	**Module-III:** Wastewater Treatment Process **and Success stories**	• Computer-based design tool for wastewater plant design. • Constructed Wetlands • Waste Water Treatment Pakistan • Aeronautical Complex (PAC) KAMRA • National Environmental Quality • Standards	**Task 15** **Task 16** <u>Details may be seen at Annexure-I</u>
	Module-IV: Wastewater Treatment Design & Technologies	**<u>Phytoremediation</u>** • Processes of Phytoremediation • Introduction of construction wetlands • Types of construction wetland • Design of construction wetlands	
Week 9	**Module-III:** Wastewater Treatment Process **& Motivational Lecture**	**<u>Case Study of Faisalabad:</u>** • Over view of wastewater irrigation practices • Status of treatment of wastewater generated in Faisalabad • An over view - wastewater flows from urban areas of Faisalabad • Area irrigated with wastewater around Faisalabad • Quality of wastewater used to grow each crop in the wastewater irrigated area • Types of crops irrigated with wastewater • Mechanism of wastewater supply to the farmers • Mechanism of wastewater payments	**Task 17** **Task 18** <u>*Details may be seen at* Annexure-I</u>

		• Composition of wastewater • Chemicals of potential health concern identified in untreated municipal wastewater • Fertilizers used by the farmers using other sources of water around the wastewater irrigated area • Investigation of food chain contamination • Adverse health impact on human health	
	Module-IV: Wastewater Treatment Design & Technologies	**<u>Miscellaneous</u>** • Hydraulic design and hydraulic profile WW treatment plant. Process instrumentation and controls • Design of WW treatment plant control systems / automation • Wastewater treatment technologies for rural areas	
Week 10	**Module-IV:** Wastewater Treatment Design & Technologies **& Success stories**	Question Answers on designs and related technologies	**Task 19** <u>Details may be seen at Annexure-I</u> **Home Assignment** Details may be seen at Annexure-I
	Module-III: Water Supply System **& Success stories**	**<u>Revisions of Basic Concepts</u>** • Electrical Principles • Mechanics • Physical Quantities • Hydrological Terms • Water Supply Terminology **<u>Water Supply Systems</u>** • Water Supply Schemes, Rural and Urban • Types of Water Sources: Students will be familiarized with the following common water sources: Surface sources –a) Rivers, canals, b) streams, c) reservoir and ponds. Sub surface sources- a) Infiltration wells, b) Infiltration galleries, local springs. • Types of Water Supply Schemes • Surface Based and Ground Water Based • Gravity based, Pumping System • Surface Water, Intake Structure, Problems and Necessary Steps In Operation • Ground Water • Dug Wells/Sanitary Wells, O&M Activities for a Dug Well/Sanitary Well, O&M Resources (Operators) for a Dug Well, Mechanized Bore Well • Tube Wells and Dug Wells with Pump Sets and their Preventive Maintenance, causes of failure of wells, Monitoring of Silt during Pumping from Source	

		• Development of Tube Wells and Bore Wells	
Week 11	**Module-III**: Water Supply System **& Motivational Lecture**	**<u>Operation and Maintenance of Pumping Machinery</u>** Components in Pumping Stations, Types of Pumps, Operation including starting and stopping of pumps in normal condition as well as after power failure or tripping • Preventive Maintenance of Pumping Machinery • Maintenance of Pumps, Vertical turbine pumps, Centrifugal pumps • Daily, Monthly, Quarterly, Half Yearly and, Annual Inspection and maintenance of Pumps and Motors. • Valves & Their Types, their quarterly and yearly maintenance and Annual Inspections • L.T Starters, Breakers and Panels and their Daily, Monthly, Quarterly and Yearly maintenance • H.T Breakers Connectors and Protection Relays & their monthly, quarterly, yearly/ Two yearly schedule of maintenance • Capacitors and their monthly, quarterly, yearly/ Two yearly schedule of maintenance. • Air compressor operations and maintenance • Tools and testing instruments • Training will be imparted to recognize and use the above tools & instruments. • Troubleshooting of pumps and electronics **<u>Water Supply Transmission System</u>** • General-Objective of Transmission System • Normal Conditions, Routine Operations, Record of Flow, Water Levels and Pressures • Transmission through Pipes • Problems in Transmission Mains, Operation • Schedule, Maintenance of Pipelines, Leakage Control, • Types of Pipes • Chlorine Residual Testing • Cross Connections and Reports • Updated transmission system maps	**Task 20** **Task 21** <u>Details may be seen at Annexure</u>

Week 12	**Module-III**: Water Supply System **& Success stories** **Module-V:** The Fundamentals of Water Treatment Process **& Motivational Lecture**	**<u>Storage of Water (Reservoirs including service reservoirs)</u>** • Procedures for Operation of Service Reservoir (S.R.) • Operation of SRs during Abnormal Conditions • Storage Level & Capacity • Plans for O&M of Service Reservoir • Cleaning of Reservoirs • Personnel and Spares and Tools • Records and Reports • Record System • Records of Maintenance • Checks to be Carried out at SRS **<u>Distribution System</u>** • The students will be imparted training to understand and perform mapping and keep Inventory of Pipes and Fittings, Field Survey, Routine Operations, Operations in Break Downs and Emergencies • Measurement of Flows, Pressures and Levels, Sampling for Quality of Water, Management in Times of Water Shortage, System Surveillance etc. Issues Causing Problems in the Distribution Syste m • Objective of a Distribution system &Types • Normal Operation • Issues Causing Problems in the Distribution System Operation Schedule • Routine Operations of the Water Supply • Distribution System • Operations in Break Downs and • Emergencies • Measurement of Flows, Pressures and Levels • Sampling for Quality of Water • Management in Times of Water Shortage • System Surveillance • Activities in Maintenance Schedule • Preventive Maintenance Schedule • Cross Connections • Types of material of pipe &specials namely CI, GI, DI, MS, PVC, HDPE, GRP RCC, AC, etc. • Plumbing Practices for Drinking Water Supply • Record keeping.	**Task 22** **Task 23** <u>Details may be seen at Annexure-I</u>

		• Checks to be Carried Out in Distribution System **Treatment of Water** • Chlorination • Dosage Methods • Disinfection by Bleaching Powder • Preparation of Solution, Dosing of Solution • Precautions • Algal Control, Familiarity with the problems caused by algae • Remedial & Preventive Measures • Adequate records • Algaecide dose Controls	
		Water Metering & Flow Meters • Intro, sizing, Installation, Testing and Calibration of Water • Metering Flow Meters • Introduction, Types, Installation, and Calibration of Flow Meter • Conclusion **Water Audit & Leakage Control** • Definition and Objective of Water Audit • Planning and Preparation • Water Audit Methodology Monitoring of Production and • Distribution System • Analysis • Problems Faced in Water Audit • Methodology of Water Audit: A reliable water audit methodology was developed jointly by the American Water Works Association (AWWA) and International Water Association (IWA) in year 2000 which will be introduced to the students in order to understand and implement the practice if required in some situation. • Objective of Leakage Control • Water Losses Leakage Detection and Monitoring • Assessment of Leakage • Preventions of Unaccounted-for Water (UFW) in Consumer Connection • Training • Assessment of UFW after Completion • Benefits of Water Audit and Leakage Detection • Leakage Repair Techniques **Introduction to Public Private Partnership** • Introduction • Need for Reforms • Suitability of Private Sector Partnership Contracts	

		• Legal Framework • Subsidies to the Poor • Competitive Bidding Advantages of PPP • Issues for PPP • Conclusion • Introduction to Fundamentals of Wastewater Treatment • Physical Process in Wastewater Treatment • Chemical Processes • Biological Process in Wastewater Treatment • Phytoremediation or Constructed • Wetlands	
Week 13	**EXAMS**	**EXAMS**	
Week 14	**Module: VI** Water Conservation Technologies **& Success stories**	• Water losses • Rainwater harvesting methods	**Home Assignment Task 23** *Details may be seen at Annexure-I*
	Basic Water Quality Testing & Motivational Lecture	• Demonstration on physico-chemical testing of water and wastewater • Microbiological testing • Water and wastewater quality profiling • Demonstration of test parameters as per NEQS	**Task 24** **Task 25** *Details may be seen at Annexure-I*
	Module: VI Water Conservation Technologies	• Green clean technologies • Water metering	
Week 15	**Module-VII:** Drinking Water Treatment-A	**Introduction** • Characterization of source waters • Identify water quality and quantity hazards and vulnerabilities • Requirement of water treatment (drinking, industrial, hospital, agricultural) • Water treatment processes	**Task 26** *Details may be seen at Annexure-I*
	Module-VII: Drinking Water Treatment-B	**Physical process** • Electro-deionization Plants • Packaged Membrane System • Extruded Carbon Block (CB) Filters Powdered Activated Carbon (PAC) Filters	
Week 16	**Module-VII: Drinking Water Treatment-A & Motivational Lecture**	• Chemical Processes-1 • Disinfection, causes of waterborne diseases and disinfection goals Theory of disinfection, • Disinfection Technologies	**Task 27** **Task 28** *Details may be seen at Annexure-I*
	Drinking Water Treatment-B	• Filtration and types of filtration and filter technologies • Membrane Filtration Systems	

		• Cartridge filter (various materials) • Ultra filtration unit • Micro filtration unit Coagulation and Flocculation • Clarification • Lime and Lime/Soda Softening • water softening; • pH control; • Pre-oxidation; and dissolved metals removal.	
Week 17	**Module-VII:** Drinking Water Treatment-A	• Chlorination • Chlorine dosing Apparatus • Chlorinators: Pellet chlorinator, gas chlorinator and hypo- chlorinators	**Task 29** *Details may be seen at Annexure-I* **Monthly Test**
	Module-VII: Drinking Water Treatment-B	**Jar Test Apparatus** • Ion Exchange • Aeration Processes • Degasification, Air Strippers, and Scrubbers • Desalination Distillation	
Week 18	**Module-VII:** Drinking Water Treatment-A	**Chemical Processes-2** • Ozonation • Ultraviolet disinfection • UV Light meter • Solar water disinfection and treatment systems	Task 30
	Module-VII: Drinking Water Treatment-B	• Reverse Osmosis and Electro dialysis Reversal • Adsorption Processes • Granular Activated Carbon and Sand Filter with various casing material	
Week 19	Employable Project/Assignment (6 weeks i.e. 21-26) in addition of regular classes. **OR** On job training (2 weeks)	• 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: 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 • The best business idea will be placed in NAVTTC business incubation center for commercialization. **OR On job training for 2 weeks:** • Aims to provide 2 weeks industrial training to the Trainees as part of overall training program • Ideal for the manufacturing trades • As an alternate to the projects that involve expensive equipment • Focuses on increasing Trainee's motivation, productivity, efficiency and quick learning approach.	
	Industrial Wastewater Treatment (Guests Speaker from Industry)	• Demonstration on industrial wastewater treatment process • Study Project	
	Module-VII: Drinking Water Treatment-A	• Arsenic Removal Technologies	
	Module-VII: Drinking Water Treatment-B	• Demonstration of iron Removal Filters	
Week 20	**Module-VII:** Drinking Water Treatment-A	• Drinking water plant operation fundamentals for water treatment and distribution. • Study Project	**Task 31** **Task 32** *Details may be seen at Annexure-I*
	Module-VII: Drinking Water Treatment-B	• Maintenance, and backwashing techniques	
Week 21	**Module-VII:** Generate report of site work Analyze job in local market CV building as per job demand & Motivational Lecture	• Study Project • Performance optimization of water treatment plants Students are introduced to: **Generate report of site work** ○ Decide on the 'Terms of reference' ○ Decide on the procedure ○ Find the information ○ Decide on the structure ○ Draft the first part of your report	**Task 33** **Task 34** *Details may be seen at Annexure-I*

		○ Analyse your findings and draw conclusions ○ Make recommendations ○ Draft the executive summary and table of contents ○ Compile a reference list ○ Revise your draft report **Analyze job in local market** ○ Review the job requirements. ○ Research similar job descriptions. ○ Identify the outcomes required for the job. ○ Examine the job efficiencies. ○ Determine the skills and training required. ○ Define the salary bands. ○ Continue to evolve the job. **CV building as per job demand** ○ Write down your Objective. ○ Enlist your Key skills and experience. ○ Write down your Education. ○ Write down your work experience. ○ Enlist Additional skills. ○ Write down your Interests and activities. Enlist References	
	Groundwater Investigation	• Study Project	
Week 22	Analyze job demand in any two-international country Jobs Applying procedure in any two-international country Analyze customer demand **& Success stories**	Students are introduced to: **Analyze job demand in any two-international country** ○ Be clear about why you want to work overseas. ○ Keep an open mind about your choice of location. ○ Start with the constraints. ○ Consult with your employer. ○ Do your research. ○ Think transferable skills. **Jobs Applying procedure in any two-international country** ○ Determine the type of job you want. ○ Decide what country you want to work in. ○ Find a job you're interested in. ○ Apply for a visa or work permit. ○ Update and localize your resume. ○ Apply for the job. **Analyze customer demand** ○ Collection of information from customer. ○ Situational analysis and specification of objectives ○ Conduct of market survey.	**Task 35** **Task 36** **Task 37** *Details may be seen at Annexure-I*

Week 23	Perform cost analysis of customer demand Conduct market survey for project estimation **& Motivational Lecture**	Students are introduced to: **Perform cost analysis as per customer demands.** ○ Categorizing Costs ○ Collect Data for Cost Analysis ○ Calculate the Costs **Conduct market survey for project estimation** ○ Set a clear goal. ○ Know what target market to survey. ○ Know what you want to investigate. ○ Get help from the people who know surveys. ○ Consider the best way to get your answers. ○ Administer the survey effectively. • Conduct a thorough survey analysis.	**Task 38** **Task 39** *Details may be seen at Annexure-I*
Week 24	Prepare quotation for customer Negotiate /Deal with customer and signed MOU **& Success stories**	Students are introduced to: **Prepare quotation for customer** ○ Construct your quote clearly and logically ○ Include all necessary information ○ Try to send your quotes quickly ○ Include your contact information like company name and phone number and try to follow up quotes with another message after a couple of days. ○ If you miss out on a big deal, try to get feedback about why you were not chosen. Was it that your price was too high, or was your quote lacking in some way? ○ If your business can support it, try setting generous payment terms as an incentive. **Negotiate / Deal with customer and signed MOU** ○ Term/duration of the MOU. ○ Cancellation provisions. ○ MOU review process ○ Dispute resolution, including (or excluding) legal actions, negotiations, consultations, or executive actions. ○ Waivers and rights involved in the MOU to make compensation claims related to the execution of the MOU against one another. ○ Intellectual Property provisions. ○ Privacy provisions • Methods for transferring funds (if applicable).	**Task 40** **Task 41** *Details may be seen at Annexure-I*
Week 25	Complete the Work done on	Students are introduced to:	**Task 42**

	site Develop professionalism **& Motivational Lecture**	**Complete the Work done on site** ○ Collect all related work items ○ Develop a process ○ Get organized. ○ Set a time to review ○ Just do it! **Develop professionalism** ○ Be productive ○ Develop a professional image ○ Take the initiative ○ Maintain effective work habits ○ Manage your time efficiently ○ Demonstrate integrity ○ Provide excellence. ○ Be a problem-solver ○ Be resilient ○ Communicate effectively ○ Develop self-awareness Build relationships	*Details may be seen at Annexure-I*
Week 26	Develop work ethics Follow teamwork environments principles **& Success stories**	Students are introduced to: **Develop work ethics** ○ Practice punctuality. Develop the habit of being on time or early for all appointments. ○ Develop professionalism. Professionalism goes beyond a crisp white shirt and tie. ○ Cultivate self-discipline. ○ Use time wisely. ○ Stay balanced. **Follow teamwork environments principles** ○ Effective Communication amongst team members. ○ Reliable team members. ○ Good approach to conflict management. ○ Strong and effective leadership. ○ Effective allocation of resources. ○ Mutual respect amongst team members. ○ Constructive working relationship. Positive approach to diversity and equality.	**Task 43** *Details may be seen at Annexure-I*

List of Machinery / Equipment

Sr. No	Name of item as per curriculum	Quantity physically available at the
1.	Atomic Absorption Spectrophotometer	02
2.	UV-Visible Spectrophotometer	02
3.	Electrical Conductivity Meter	01
4.	pH Meter	02
5.	Turbidity Meter	02
6.	Colorimeter	02
8.	Flame Photometer	02
9.	Dissolved Oxygen Meter	02
10.	BOD Tintometer	01
11.	Chemical Oxygen Demand Apparatus	01
12.	Temp. & Humidity Meter	01
13.	Distillation system	01
14.	Analytical Balance	01
15.	Magnetic Stirrer and hot plate	01
16.	Wastewater treatment demonstration	04
17.	Total Organic Carbon Analyzer	01
18.	Microwave Digester	01
19.	Hot air oven	01
20.	Soxhlet Extraction System	01
21.	Ultra Sonic Bath	01
22.	Refrigerators	05
23.	Muffle Furnace	01
24.	Centrifuge	01
25.	Vortex Mixer	01
26.	Rotatory Evaporator	01
27.	GCMS	01
28.	Nitrogen sample concentrator	01
29.	Grinder	01
30.	Filtration Assembly	07
31.	Acid Fume Hood	07
32.	Biological safety Cabinet	02
33.	Membrane Filtration Assembly	04
34.	Incubators	04
35.	Autoclaves	01
36	Jar test apparatus	
37	Ozonator	
38	Chlorinator	

39	Water treatment plant	
40	Demonstration models	
41	Reverse osmosis system	
41	Various types of pumps	
42	Valves	

1. Consumables List

Sr. No	Chemicals Name
1.	COD Vials (150, 1500, 15000)
2.	COD Standard Potassium Hydrogen Phthalate (80g)
3.	BOD BSB Standards
4.	Glucose-Glutamic Acid
5.	Sodium Sulphite
6.	Calcium Chloride
7.	Magnesium Sulphate. Heptahydrate
8.	Ferric Chloride. Hexahydrate
9.	Sodium Dihydrogen Phosphate Monohydrate
10.	Potassium Hydroxide
11.	Arsenic Standard 1000 ppm 500 ml
12.	Copper Standard 1000 ppm 500 ml
13.	Nitrate Standard 1000 ppm 500 ml
14.	Sulphate Standard 1000 ppm 500 ml
15.	Fluoride Standard 1000 ppm 500 ml
16.	Iron Standard 1000 ppm 500 ml
17.	Calcium Standard 1000 ppm 500 ml
18.	Hardness Standard 1000 ppm 500 ml
19.	pH Standard 1000 ppm 500 ml
20.	EC Standard 1000 ppm 500 ml
21.	Sodium Standard 1000 ppm 500 ml
22.	Potassium Standard 1000 ppm 500 ml
23.	Turbidity Standard 1000 ppm 500 ml
24.	Chloride Standard 1000 ppm 500 ml
25.	Bicarbonate Standard 1000 ppm 500 ml
26.	Alkalinity Standard 1000 ppm 500 ml
27.	All related chemical and glassware required for course parameters
28.	Alum
29.	Calcium hypochlorite
30.	All consumables required to demonstrate water and waste water treatment process including UV Lamps, filters, casings, dosing pumps

2. Minimum Qualification of Teachers / Instructor

The qualification of teachers / instructor of this course should be minimum of PhD Environmental, Chemical or civil engineering, chemistry, microbiology or BS/MS/ in same disciplines with minimum 5 years of experience in relevant trade.

3. Supportive Notes

Teaching Learning Material

Books Name	**Author**
APHA (2017). Standard methods for examination of water and waste water, 23rd ed. American Public Health Association and Water Pollution Control Federation, New York, Washington, DC.	Eugene W. Rice Roger B. Baird Andrew D. Eaton Lenore S. Clesceri
Food Control Manual, Food and Agriculture Organization (FAO), Rome Italy 1971.	Rafai, FAO
National Standards for Drinking water quality 2010 (Pak-EPA)	Pak -EPA
National Environmental Quality Standards for Municipal and Liquid Industrial Effluents 1999 (Pak-EPA)	Pak-EPA
Guidelines for Drinking Water Quality 4th Edition, 2017 Geneva	WHO
Bioremediation of Industrial waste for Environmental Safety Volume I: Industrial Waste and Its Management	Gaurav Saxena. Ram Naresh Bharagava
Biological Wastewater Treatment Series Volume 1 **Wastewater Characteristics, Treatment and Disposal**	Marcos Von Sperling

Week	Task No.	Description
Week-1	Task-1	Enlist the different types of wastewater and major contaminants found in untreated wastewater
Week-2	Task-2	Identify the stages involved in wastewater treatment process
	Task-3	Plot different types of charts and derive process equations
Week-3	Task-4	Explore the different types of technologies involved in biological and chemical treatment process and draw a sketch of stages involved in primary wastewater treatment process
Week-4	Task-5	Enlist different physical quantities with units
	Task-6	Explore the locations and types wastewater treatment plants and their treatment efficiency in Pakistan
	Task-7	Draw a table of technology and their functions involved in secondary treatment
Week-5	Task-8	Identify the main parameters defining the wastewater quality and explore the permissible limits of NEQS, 1999 for these parameters
	Task-9	Identify the traditional technology involved in secondary treatment
	Task-10	Explore the latest technology involved in secondary treatment and compare them with traditional technology
Week-6	Task-11	Enlist the stages involved in primary and secondary treatment process
	Task-12	Explore the contaminants and technology involved in tertiary Treatment
Week-7	Task-13	Identify the stages involved in Sewage treatment plant (STP) & different types of filters involved in this process
	Task-14	Enlist different types of sludge and the its applications in real life
		Compare the Package sewage treatment plants with traditional method of sewage treatment
Week-8	Task-15	Explore different types of wastewater treatment plants
	Task-16	Draw a sketch diagram of constructed wetlands
Week-9	Task-17	Generate a brief report on wastewater irrigation practices adopted in Faisalabad.

	Task-18	Develop a design of wastewater treatment plant.
Week-10	Task-19	Study and recognize different types of water supply systems
Week-11	Task-20	Enlist different types of pumps and their maintenance
	Task-21	Explore updated transmission system maps
Week-12	Task-22	Identify the purpose of service reservoirs and develop a plan for O &M of service reservoir
	Task-23	Explore disinfection methods of water
Week-13		Midterm
Week-14	Task-23	Design a rainwater harvesting system for commercial area
	Task-24	Identify the physico-chemical and wastewater parameters for water and wastewater testing and explore their permissible limits as per Drinking water standards and NEQS standards for wastewater
	Task-25	Develop a water metering plan for a community
Week-15	Task-26	Identify different types of physical processes and explore the advanced technology and compare it with traditional physical processes
Week-16	Task-27	Identify the drinking water treatment chemical processes and enlist the technology involved.
	Task-28	Identify different types of filters and develop a comparison between them with respect to treatment efficiency and cost
Week-17	Task-29	Calculate the chlorine dose for a rectangular water tank
Week-18	Task-30	Develop a comparison between different chemical processes
Week-19		Project week
Week-20	Task-31	Explore the stages involved in drinking water treatment plant
	Task-32	Demonstrate backwashing of drinking water treatment plants
Week-21	Task-33	Demonstrate optimization of water treatment plant
	Task-34	Build your CV as per job demand
Week-22	Task-35	Analyze job demand in international country.
	Task-36	Apply for job in abroad.
	Task-37	Analyze customer demand
Week-23	Task-38	Perform cost analysis as per customer demand.
	Task-39	Conduct market survey for project estimation

Week-24	Task-40	Prepare quotation for customer
	Task-41	Negotiate / Deal with customer and signed MOU
Week-25	Task-42	Complete the Work done on site
Week-26	Task-43	Develop work ethics

Wastewater Treatment Technician

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=tIQ0CWgszI0

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

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

Annexure-III

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:
• 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. • Understand what communication skills mean • Understand what skills are	• Podium • Projector • Computer • Flip Chart • Marker	• Communication • Self Confidence • Teamwork

important for communication skills		

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 and Success Stories (Course Outlines)

Sr #	Topic title	Contents	Theme
1	**Success stories**	1. Story of Skill worker who get good job. 2. Entrepreneur /self-business 3. Freelancer	1. Family Background 2. How to get Training 3. How to get job 4. Success trait **5.** Few word of advice for youth
2	**Motivational Lectures**	1. Soft skills 2. work Ethics 3. Personality Grooming	**Good Habits** • Punctuality • Honesty • Positive attitude **Interpersonal skills** • Determinant • Consistent • Welling worker • Team work • Initiative • Hardworking • Creative • Enthusiastic • Goal oriented • Self-motivated • Communication • Loyalty

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	**Jim Rohn**	**https://www.youtube.com/watch?v=chn86sH0O5U**

EMOTIONS	**Les Brown** **TD Jakes** **Tony Robbins**	
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-IV

SUCCESS STORY

S. No	Key Information	Detail/Description
1.	**Self & Family background**	**Danyal Saleem,** who lives in Mirpur (AJK), is an example of how hard work and perseverance can reap rich rewards when bidding for projects online. The graphic designer works exclusively on an online freelancing platform and has earned, on average, **US$20,000** per month for the past several months. But this isn't a story of overnight success – Danyal has had to work hard to differentiate himself and stay true to his goal. It was a full year later, in May 2017, when Danyal finally decided to jump in. He signed up for one of the numerous sites that connect designers or coders with people or companies that have small projects, like designing a logo or building a website. He had already started a small business to help pay for his college education, so he was nervous and apprehensive about the decision. "I gave myself two or three months at most. If I didn't succeed, then I would go back to running the business as it was showing potential," he says. **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**	Certification in graphic designing from STEPS (NAVTTC partner institute)
3.	**Post-training activities**	**Danyal's** area of expertise is in **graphic design**. 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. Danyal 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 Danyal's 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, branching out from logo design to business cards, banners, Facebook cover pages, letterheads, and stationery. But he's had to face his fair share of challenges too. The shoddy state of internet infrastructure in his city, 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	**Success Traits**	**Success Traits (characteristics)** **Good Habits** • Punctuality • Honesty • Positive attitude **Interpersonal skills** • Determinant • Consistent • Welling worker • Team work • Initiative • Hardworking • Creative • Enthusiastic • Goal oriented • Self-motivated

		• Communication • Loyalty
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.

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***

Annexure-V:

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.