

A. Up-gradation Course Contents, 2019

SL No	Course title and relevant information	Course Contents
01	<p>Course Code : EE - U336</p> <p>Electrical Power Generation & Power Plant Technology Participants : Junior & Mid-level officers Duration : 13 ~ 24 January, 2019 Course Fee : 12,300/- Per Participant</p>	<p>Introduction to different types of power generating plant and energy resources. Mechanical & electrical features of generators; Excitation system, Prime movers: Diesel Engine, gas turbine & Steam turbine, Lube oil, gas & steam system for turbine, Steam boilers, Operational control & safety devices for prime movers. Control & Protective devices for generator. Voltage & frequency Control of generator. Start-up, Synchronization & loading of generator. Practice on generator operation; Trouble shooting & maintenance. Industrial and electrical safety.</p>
02	<p>Course Code : PT- U305</p> <p>Heat Transfer & Operation of Heat Exchanger Participants : Junior & Mid-level officers Duration : 19 ~ 24 January, 2019 Course Fee : Tk. 7,800/- Per Participant</p>	<p>Mode of Heat Transfer and Heat Transfer Media, Basic system of Heat Transfer and Types of Heat Exchanger, Heat Transfer Equipment and Their Application, Constructional Parts of Heat Exchanger, Performance Criteria and Operational Features of Heat exchanger, Corrosion, Scaling, Fouling and Effect of Cooling Water on Heat Exchanger, Chemical Cleaning and Passivation of Heat Exchanger, Inspection and Trouble Shooting of Heat Exchanger, Exchanger effectiveness determination. <i>Industrial safety</i>. Practice and Study of Shell & Tube Heat Exchanger, NTU Method, Flow influence on the heat transfer. Reynolds number calculation, Nusselt number etc. using SCADA & PID control.</p>
03	<p>Course Code : CE-U119</p> <p>Quality Control in Process Industries Participants : Operator/Technicians Duration : 19 ~ 24 January, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Quality control & Productivity; Industrial application of classical analysis; Analysis of Industrial water: Physical parameter and Mineral content; Principle, operation and application of Atomic Absorption Spectrophotometer, Operation and calibration of UV/Vis spectrophotometer; Principle, instrumentation and operation of GC and HPLC; Pollution control in process industries: Wastewater treatment techniques; Different testing methods used in process industries e.g Fertilizer, Cement etc. Air Pollution Monitoring: Stack chimney emission gas and indoor air quality monitoring. <i>Industrial safety</i></p>
04	<p>Course Code : IC-U320</p> <p>Programmable Logic Controller and Programmable Instruments Participants : Junior & Mid-level officers Duration : 16 ~ 28 February, 2019 Course Fee : 16,000/- per participant</p>	<p>Hardware and Software of PLC and Programmable Instruments, Functional description of PLC and programmable instruments, Installation. Programming, maintenance and trouble shooting of PLC and Programmable Instruments.</p>
05	<p>Course Code :ME-U302</p> <p>Inspection & Troubleshooting of Rotating Machines Participants : Junior & Mid-level officers Duration : 16 ~ 28 February, 2019 Course Fee : Tk. 12,300/- Per person</p>	<p>Introduction and concept of Preventive maintenance in Inspection & Troubleshooting of rotating machines: Different types of Pumps, Compressors; Construction & Maintenance of Turbine, Inspection & Troubleshooting of Turbine, Troubleshooting of Fan, Blower, Agitator and their remedy, Construction & Maintenance of pulp Refiner, Construction & Maintenance of cement Ball Mill, Troubles in different equipment due to improper Lubricants & Lubrication, NDT methods used in inspection of machinery components, Machine condition monitoring and analysis by using vibration analysis technology, Shaft failure analysis and its remedy, Gear failure analysis and its remedy, Causes of Seal failure, Root causes of Bearing failure and their remedy, Inspection, Study of Rotating machines, Demonstration on Vibration monitoring and diagnosis equipment, Case study on Turbine & Compressor failure, Inspection of Machinery components by NDT, Industrial and mechanical safety.</p>

06	<p>Course Code : EE- U118</p> <p>Electrical Maintenance Techniques Participants : Operator/Technicians Duration : 23 ~ 28 February, 2019 Course Fee : Tk. 7,800/- Per person</p>	<p>Different maintenance methods preventive maintenance, inspection & monitoring of switchgear system, Generator, Transformer, motor and other electrical equipment. Hands-on practice on preventive maintenance scheduling & execution. Safety in electrical maintenance.</p>
07	<p>Course Code : CI- U101</p> <p>Computer & Its Application Participants : Operator/Technicians Duration : 23 ~ 28 February, 2019 Course Fee : Tk. 7,800/- Per person</p>	<p>Introduction to computer Types; Structure of personal computers: Understand hardware parts of computer; Understand software parts of computer- Meaning of BIOS(Basic Input Output System), Drivers, OS(Operating System), and Applications software(MS-office etc.); MS Word: Basic screen configuration, save need for save, and various types of documents; Document passwords enabling & disabling, understanding of Zoom in/out-screen Zoom/out, Find/Replace, Undo/Redo, features of Memo, and Spelling checker; Concept of Fonts, Font colors, Font sizes, Underline and Shades; Function of Paragraphs and Multi-stage, Style; How to use Shapes and Objects; Organize Tables, Cells, and Pages; Function of Footnotes, Endnotes, Headers, Footers, Inserting, and Sorting; Features of Multi-stage alignment, Caption, and Text substitution; Document Printing. MS Excel: Basic screen configuration and its elements; Display types of characters and numeric data; How to adjust row and column sizes; Concept of worksheets and defining names; Necessity of Fill handle and data validation; Conditional formatting using parent/child rules and Cell highlighting; Page layout and background pictures; Differences among Absolute address, Relative address, and Mixed address; Creating a formula by names; Formula calculation using the auto sum feature; Adjusting grid spacing and labels, and display the legend; Necessity of Pivot table; Understanding of Database functions used in Excel; How to implement Macros and Hyperlinks; Printing procedure. MS PowerPoint: Basic screen composition and Theme; Move/Copy/Delete slides; Painting and Style; Customizing Ribbon menu; Concept of Font, Color, Logo, Theme, Bullets, Line and Paragraph Spacing and adjust List level; How to merge several Shapes; Understanding of Shape align, Color extraction, two and three-dimensional shapes; Features of Smart Art; Converting your texts or pictures using SmartArt graphics; How to insert video clips and audio clips; Image setting and compressing media files; Means of video files and PDF documents; Applying Object animations/Screen transition to slide presentation; Recording Slide show/Online presentation; Printing procedure.</p>
08	<p>Course Code : IC-U332</p> <p>Advanced PLC with SCADA system & its Application in Process Automation and Control Participants: Junior & Mid-level officers Duration : 03 ~ 14 Mar, 2019 Course Fe : Tk. 18,800/- Per person</p>	<p>Introduction to Advance PLC and Control system; Architecture and Functional Description of Advanced PLC and Operator Station (OS); Programming languages and Programming Techniques; Interface devices and software; PC-based system, Operation station and SCADA software; Program Development practice for different languages; Installation, Maintenance and Troubleshooting PLC.</p>
09	<p>Course Code: IS-U101</p> <p>Industrial Safety & Prevention of Accidents Participants : Operator/Technicians Duration : 03 – 14 Mar, 2019 Course Fee : Tk.12,300/- Per person</p>	<p>Industrial hazards & safety requirements, safety regulations & safety signs, accident & its prevention, fire and explosion hazards, chemical & acoustic hazards, electrical hazards & safety precautions, personal protective equipment, house keeping and its importance, safe handling of gas and gas cylinders, safety measures associated with confined space etc. along with practical sessions related to safety, Fire alarm system, various types of up-to-date safety equipment & Personal protective equipment and rescue operation.</p>
10	<p>Course Code : ME- U317</p> <p>Installation, Troubleshooting & Maintenance of Industrial Pumps Participants: Junior & mid-level officers Duration : 09 – 14 Mar, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Classification of pumps and their use; Construction and working principle of centrifugal & reciprocating pumps; Installation and troubleshooting of centrifugal pump; Maintenance of centrifugal and reciprocating pumps; Construction, working principle, troubleshooting and maintenance of Gear, Screw, Vane & Lobe pumps; Bearing, Lubrication and Sealing system of pumps; Disassemble and assemble practice of pumps; Operational behavior of centrifugal pump; Safety in mechanical maintenance.</p>

11	<p>Course Code: CE-U310</p> <p>Spectrometric Methods of Chemical Analysis Participants: Junior & mid-level officers Duration : 09 – 14 Mar, 2019 Course Fee : Tk.7,800/- Per person</p>	Principle and basic concept of spectroscopy; Absorption and Emission spectroscopy; multiple applications of different spectrophotometer, Anionic constituents determination in industrial water; Operational maintenance, troubleshooting and calibration of atomic absorption spectrophotometer, UV/Visible and Infrared spectrophotometer; Data acquisition, interpretation and their application.
12	<p>Course Code: EE-U313</p> <p>Industrial Motors: Problems and Remedies Participants : Junior & mid-level officers Duration : 31 Mar ~ 11 Apr, 2019 Course Fee : Tk.12,300/- Per person</p>	Working principle of various industrial motors: Induction, Synchronous, DC, universal motor etc. Constructional feature & operational behavior of various motors. Mechanical, Electrical & magnetic circuit problems & their remedies. Hands-on practice on assembly/ disassembly, start-up, control, protection, troubleshooting & maintenance of different types of motors.
13	<p>Course Code :ME-U103</p> <p>Alignment Technology of Rotating Machines, Level-I Participants : Operator/Technicians Duration : 31 Mar ~ 11 Apr, 2019 Course Fee : Tk.12,300/- Per person</p>	Introduction to alignment techniques of rotating machine, Equipment used & terms related to misalignment, Importance of alignment for different types of coupling, General description of different methods of alignment, Centering of rotor and casing, Thermal effect on alignment, Alignment practice on turbine & compressor, Alignment of chain & sprocket, Alignment of coupling with feeler gauge & knife edge, Alignment of V-belt, Alignment by rim & face method of a machine train, Alignment of gear & pinion, Demonstration on LASER alignment. Industrial safety and safety in mechanical maintenance.
14	<p>Course Code: PT- U336</p> <p>Process Simulation Using Aspen Plus Software Participants : Junior & mid-level officers Duration : 06 ~ 11 Apr, 2019 Course Fee : Tk.7,800/- Per person</p>	Introduction to Aspen plus, Aspen Plus start-up, Built-in function, Physical property estimation, Various flash calculations, Heat exchanger simulation, Basic distillation, Reactor modeling, Converting a process from steady-state to dynamic simulation (<i>Theory included in practice session</i>).
15	<p>Course Code: CI- U304</p> <p>Computer & Its Application in Industries Participants : Junior & mid-level officers Duration : 06 ~ 11 Apr, 2019 Course Fee : Tk.7,800/- Per person</p>	Introduction to Computer Hardware and Software; Introduction to MS office; Different Menu Bar or Icon meaning of MS office: File, Edit, View, Insert, Format, Tools, Table, Help etc.; MS Word: Starting MS Word, Opening new file, Document preparation in different formats and editing, different types of table making and editing, file saving/opening old or recent file/editing/closing. Printing: Page set up, margin set up, paper orientation, print preview, printer ink selection, printer selection and printing; MS Power Point: Picture and image added/link in slide, Organization chart development, Import Excel and other charts / file in power Point, Printing procedure; MS Excel: Starting MS Excel, Document preparation in different formats and editing for formula calculation, file saving/closing/opening. MS Excel: Different types chart and graph composing, File saving/closing/opening, printing; Document Printing; Computer application in Industrial Control: Role of Computer in Industrial Process Control; Types of Industrial Computer; Computer Interfacing technique with different devices; Use of computer in DCS System; Use of computer in PLC Control System; Computer for Industrial data communication; Computer Safety Control in Industries.
16	<p>IS-U305</p> <p>Risk Awareness & Risk Management in Process Industries Participants: Junior & Mid-level officers Duration : 09 – 20 Jun, 2019 Course Fee : 12,300/- Per person</p>	Introduction to risk awareness and its management; Safety regulations and safety sign; Safety in chemical process plant operation; Inspection, Auditing & Recording system of process equipment; Fire and Explosion hazards; Toxic hazard; Personal protective equipment; Electrical hazards; Safety measures in confined spaces; Effect of preventive maintenance on safety; HAZOP & HAZAN along with practical sessions related to safety, Fire alarm system, various types of up-to-date safety equipment & Personal protective equipment and rescue operation.

17	Course Code:ME-U344 Bearings & Industrial Lubricants Participants : Junior & mid-level officers Duration : 15 – 20 Jun, 2019 Course Fee : Tk.7,800/- Per person	Selection criteria of bearings, Different types of bearings: Construction, Material and Designation, Bearing tolerance and fit system, Causes of bearing failure and storage of bearings; Importance of lubricants, Selection criteria of lubricants, Properties of different types of lubricants, ISO viscosity grades of lube oil, NLGI grades of greases, Lube oil purification and storage, Environmental impact of lubricants. Safety in mechanical maintenance.
18	Course Code : EE-U337 Electrical Sub-Station & Switchgear: Operation & Maintenance Participants : Junior & Mid-level officers Duration : 15 – 20 Jun, 2019 Course Fee : Tk. 7,800/- Per person	Electrical power distribution system requirements. Circuit breakers, Isolator & bus bar, Control & protective devices, Testing & maintenance of power transformer, Current transformer & Potential transformer. Electrical storage batteries, Testing of relays. Testing of high voltage cables & transformer oil. Testing & calibration of control & protective devices. Power factor improvement devices. Shop practice on substation switch gear. Electrical safety.
19	Course Code : CE-U346 Instrumental Methods of Chemical Analysis Participants : Junior & Mid-level officers Duration : 23 Jun. ~ 04 Jul., 2019 Course Fee : Tk.12,300/- Per person	Introduction to instrumental analysis, Principles and instrumentation of Spectrophotometric analysis: UV-Vis spectrophotometer, FTIR, AAS, ICP-OES, ED-XRF. Industrial applications and analysis by UV-Vis spectrophotometer, FTIR, AAS, ICP-OES and ED-XRF. Operational maintenance and safety of those instrument, Industrial application of classical analysis.
20	Course Code : PT- U108 Industrial Water Treatment & Operation of Water Treatment Plant Participants : Operator/Technicians Duration : 23 Jun. ~ 04 Jul., 2019 Course Fee : Tk.12,300/- Per person	Introduction to Industrial Water Treatment ; Raw Water Treatment; Process Symbols and Process Diagrams; Ion Exchange Process and Regeneration of Ion Exchanger; Water Conditioning for Boiler; Cooling Water and its Treatment; Water Treatment by Membrane Separation Processes; Water Treatment Plant Instrumentation; Principal Constituents of Concerns in Wastewater Treatment; Waste Water Treatment Techniques; Troubleshooting of Water Treatment Plant; Practice on Process Drawing; Water Treatment (Lime-Soda softening); Water Demineralization by Ion Exchange and Reverse Osmosis; Analysis Key Parameters for Water Quality: Hardness, Turbidity, Acidity, Alkalinity BOD and COD etc.; Jar test for Optimum Chemical Dosing; Industrial safety
21	Course Code : ME-U110 Maintenance, Preservation & Fitting of Bearings Participants : Operator/Technicians Duration : 29 Jun – 04 Jul, 2019 Course Fee : Tk. 7,800/- Per person	Different types of bearings: Types and construction, Material and designation, Inspection, Troubleshooting and Maintenance of Bearings, Storage system of bearings, Practice on mounting & dismounting of roller bearings; Vernier Caliper, Micrometer & Dial gage; Clearance measurement, adjustment & mounting of Plain bearings. Bearing damage & their identification. Role of Lubrication for bearings. Safety in mechanical maintenance.
22	Course Code : IC - U334 Distributed Control System (DCS) in Industries Participants : Junior & Mid-level officers Duration : 07 ~ 18 Jul, 2019 Course Fee : Tk. 16,000/- Per person	Brief description of control system, Architecture, hardware and software of DCS, Sensors, transmitters and sequential logic system in industries, Hardware, software and programming on Siemens and Mitsubishi PLC, Hardware and software configuration of Yokogawa PLC, Hands on practice on Logic Designer software, Data communication and networking system for DCS, DCS graphic panel designing using FAST/Tools, Operation of pressure control loop using multi-loop controller, DCS pilot plant operation using Yokogawa PLC, Troubleshooting and maintenance of DCS control system, Comparison between PLC, DCS and SCADA, Operation of a level process station by SCADA (OMRON PLC)

23	Course Code: CE – U118 Use of Common Laboratory Equipment & Chemicals Participants : Operator/Technicians Duration : 13 – 18 Jul, 2019 Course Fee : Tk. 7,800/- Per person	Introduction to quality control laboratory, Fundamental features of chemical analysis, Analytical reagent, chemical and solution, Essential apparatus, instrument & equipment, Apparatus for gravimetric & volumetric analysis, Potentiometric & Conductimetric instruments, Instruments used for physical parameters, Instruments for optical methods of analysis, Familiarization of GC and AAS.
24	Course Code: IS- U122 Safe Handling of Chemicals in Laboratories & Other Establishment Participants : Operator/Technicians Duration : 13 – 18 Jul, 2019 Course Fee : Tk. 7,800/- Per person	Introduction to industrial safety & safety rules; Identification of hazardous chemicals; Chemical hazards; Handling of industrial chemicals; Storage of chemicals; Fire & Explosion hazard and its prevention; Material Safety Data Sheet (MSDS); Exhaust and Ventilation system; Personal Protective Equipment; Pressurized Vessels: Hazard & Handling; Corruption issue & Quality of governmental services along with practice on different portable fire extinguishers, chemical incompatibility test; different safety equipment and demonstration of personal protective equipment.
25	Course Code : EE-U335 Industrial Motor Control (Level-1) Participants : Junior & Mid-level officers Duration : 21 Jul. ~ 01 Aug., 2019 Course Fee : Tk.12,300/- Per person	Introduction to motor control, history of motor control, Electrical tools & instruments, Electrical symbols and electrical diagrams, Logic and sequence diagrams, Magnetism and magnetic solenoids, AC/DC magnetic contactors and motor starters, Timer, time delay and logic, Electrical hazard & safety. Selection of motor control devices, Direct on line (DOL) motor circuits, Reversing motor circuits, Star-delta motor circuit, Reversing star-delta motor circuit, two speed motor circuit, Power distribution for motor control, fuse, breaker and relays for motor control, practice on controls wiring, Preventive maintenance and troubleshooting of motor control circuit.
26	Course Code : ME - U346 Basic Mechanical Design by AutoCAD 2D & 3D Participants: Junior & Mid-level Officers Duration : 27 Jul. ~ 01 Aug., 2019 Course Fe : Tk. 7,800/- Per person	Basic knowledge on Computer, Installation of AutoCAD software, Creating Workspace & Interface for 2D & 3D Drawing, Drawing techniques using coordinate entry method, Sketch Basic Elements for 2D drawings, Editing the 2D drawings, Input Character & Dimensioning of the drawings, Setting Layers & Organizing the drawings with layers, 2D Drawing Examples & tutorials for Mechanical Components, Sketch Basic Solid Bodies (3D), Editing the Solids (3D), 3D Drawing Examples with tutorials of Mechanical 3D Modeling, Prepare drawing necessary information for plotting, Printing out Drawing both 2D & 3D drawings.
27	Course Code : PT- U336 Process Simulation Using Aspen One Software Participants : Junior & Mid-level Officers Duration : 27 Jul. ~ 01 Aug., 2019 Course Fe : Tk. 7,800/- Per person	Introduction to Aspen plus, Aspen Plus start-up, Built-in function, Physical property estimation, Various flash calculations, Heat exchanger simulation, Basic distillation, Reactor modeling, Converting a process from steady-state to dynamic simulation (<i>Theory included in practice session</i>).
28	Course Code : IC - U333 Application of PLC in Industries Participants : Junior & Mid-level officers Duration : 25 Aug ~ 05 Sep, 2019 Course Fee : Tk.16000/- Per person	Introduction to Omron, Mitsubishi, Allen Bradley and Siemens PLC, Relay based sequential logic system in industries, Hardware description of different PLC, Programming software of PLC and I/O addressing format, Developing ladder diagram using programming software, Graphic panel designing for touch panel using interfacing software, Graphic panel designing for PC using SCADA software, Operation of a level process station by advanced PLC, Troubleshooting & maintenance of PLC.
29	Course Code: IS-U115 Electrical Safe Work Practices for Process Industries Participants : Operator/Technicians Duration : 31 Aug ~ 05 Sep, 2019 Course Fee : 7,800/- Per person	Introduction to Electrical safety; Safe voltage and current for working personnel; Electrical measuring & testing equipment and protective devices; Fire and explosion hazards & their prevention; Electrical safety signs, safety barriers, safety tags, safety locks etc.; Role of earthing in electrical safety; Safe electrical working procedures & precautions; Emergency actions in case of electrical hazards; Electrical personal protective equipment and Electricity regulations, Corruption issue & Quality of governmental services along with practical sessions on earthing & measurement of Earth resistance & fire fighting.

30	<p>Course Code: PT- U321</p> <p>Industrial Corrosion & Corrosion Control Participants : Junior & mid-level officers Duration : 31 Aug ~ 05 Sep, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Introduction to industrial corrosion; (Corrosion principles, Effects of corrosion, Cause of corrosion, Cost of corrosion); Classification of corrosion; Classification based on Mechanism, Environment, Corrosivity effect; Factors influencing corrosion (Metallurgical aspects, Mechanical factors, Environmental factors); Corrosion in aqueous environment (Corrosion in cooling water system and steam circuits); Corrosion of pipelines in soil;- Nature of soil corrosion ;- Biological corrosion - Testing and remedial measures; Protection against corrosion:- Change in design; - Selection of material; - Change in environment; Corrosion prevention:- by using inhibitors - by using surface coating, linings and paints; Principles & Application of Cathodic and anodic protection; Determination of galvanic potential of different metals, Cathodic protection by sacrificial anode (lab test). Determination of Soil Resistivity, Corrosion Profiling, Mapping & Flaw detection by using Ultrasonic method, etc.</p>
31	<p>Course Code: ME-U306</p> <p>Non-Destructive Testing(NDT) Methods Participants : Junior & mid-level officers Duration : 31 Aug ~ 05 Sep, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Introduction to NDT methods; Physical & Mechanical properties of metal; Defects & Discontinuities during metal casting & welding; Defects & Discontinuities of metals for forging, rolling, heat treatment & machining; General description, job preparation, application & observation of DPT; General description, sources of magnetic fields, equipment & materials, application & observation of MPMT Method; Principles, fundamentals, calibration of equipment & test procedure of Ultrasonic Testing Method; Reporting of NDT result.</p>
32	<p>Course Code : IC-U120</p> <p>PLC Fundamentals and SMART Instruments Participants : Operator/Technicians Duration : 21 ~ 26 Sep, 2019 Course Fee : Tk.9,400/- Per person</p>	<p>Hardware and Software of PLC and Programmable Instruments, Functional description of PLC and programmable instruments, Installation. Programming, maintenance and trouble shooting of PLC and Programmable Instruments.</p>
33	<p>Course Code: PT- U106</p> <p>Industrial Boilers & Operation of Steam Generation system Participants : Operator/Technicians Duration : 15 ~ 26 Sep, 2019 Course Fee : Tk. 12,300/- Per Participant</p>	<p>Introduction to Industrial Boiler and steam system, Process symbols & Process diagrams, Familiarization with constructional parts of boiler, External treatment for boiler feed water, Internal treatment for boiler water, Combustion management of boiler, Burner & firing system of boiler, Control & Safety system of boiler, Standard operating procedure (SOP) of boiler, Boiler blow-down, heat recovery and de-aerator, Boiler energy efficiency, Cleaning & preservation of boiler, Sequential logic interlock system, Industrial Safety etc. Basic concept of industrial productivity; Industrial safety, Personal protective equipment and fire protection arrangement.</p>
34	<p>Course Code: EE-U334</p> <p>Electrical Maintenance Techniques Participants : Junior & Mid-level officers Duration : 21 ~ 26 Sep, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Different maintenance methods preventive maintenance, inspection & monitoring of switchgear system, Generator, Transformer, motor and other electrical equipment. Hands-on practice on preventive maintenance scheduling & execution. Electrical safety.</p>
35	<p>Course Code : CE-U313</p> <p>Chromatographic Methods of Chemical Analysis Participants : Junior & Mid-level officers Duration : 21 ~ 26 Sep, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Principle, multiple application of Gas Chromatograph (GC), high performance liquid chromatograph (HPLC) and elemental analyzer. Operational maintenance, safety, trouble shooting and calibration of chromatographic instruments; Practice on gas chromatograph, high performance liquid chromatograph (HPLC) and elemental analyzer; Analytical data acquisition, recording & presentation.</p>

36	<p>Course Code: IC-U335</p> <p>Factory automation using latest DCS Participants : Junior & Mid-level officers Duration : 19. ~ 24 Oct, 2019 Course Fee : Tk. 9,400/- Per Participant</p>	<p>Introduction to architecture, hardware and software of DCS Hardware, software and programming on Siemens and Yokogawa PLC. Hands on practice on Yokogawa Logic Designer software, DCS graphic panel designing using Yokogawa FAST/Tools. DCS plant operation using Yokogawa PLC.</p>
37	<p>Course Code: PT- U102</p> <p>Measuring & Control of Process Parameters Participants : Operator/Technicians Duration : 13 ~ 24 Oct, 2019 Course Fee : Tk. 12,300/- Per Participant</p>	<p>Introduction to Control Technique of Process Parameters; Indicating, Recording and Counting Instruments; Process Symbols and Process Diagram; Pressure and Differential Pressure Measurement; Liquid Level Measurement; Fluid flow and temperature measurement; Transmitters; Controllers and It's Mode of Operation; Process Control Loops; Single Control Loop: Open, Close Loops, Feed Forward, Feed Back- Control Loops, Up stream, Downstream Control etc.; Complex Control Loop: Ratio Control Loop, Cascade Control Loop, Split-Range Control Loop; Control Valve; Sequential Logic Inter-lock Diagram; Industrial Safety; Practice on Process Symbols and Process Diagram; Level Measurement by Using Immersed Body (Displacer); Input-Output(I/O), relationship of a Transmitter; Study of Process Response For Level Control Loop By Using Different Size Liquid Tank; Study of Level Flow Cascade Control Loop and Determination of Valve Characteristics; Sequential Logic Operation, Control of Process Parameters using SCADA & PID Control.</p>
38	<p>Course Code: CE - U342</p> <p>Quality Management System based on ISO Standards Participants : Junior & Mid-level officers Duration : 19. ~ 24 Oct, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Definition and Terminology; Initiatives for Quality Assurance System; ISO Standards Related to Calibration and Testing; Necessity and Development of ISO Based Test and Calibration Service in Bangladesh; ISO based Industrial Quality Management; Implementation of ISO 9001; QMS for Testing and Calibration Labs; QMS Documentation; Development of Quality Manual and it's Procedures and Selection of Methods; Statistical Treatment of Measurement Data; Internal Auditing and Measurement of Uncertainty; Practice of Uncertainty Calculation; Quality Assurance and Reporting of Results.</p>
39	<p>Course Code : ME - U345</p> <p>Welding Technology: General, MAG, Seam, Spot & Plasma Cutting Participants : Junior & Mid-level officers Duration : 19. ~ 24 Oct, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Introduction to different welding methods; Familiarization with Iron & Steel materials; Oxy-Acetylene gas welding and cutting, Plasma Cutting, SMAW, TIG, MAG, Seam, Spot welding methods, Welding consumables, Welding positions & symbols, Joint design, Pre & Post heat treatment, NDT methods for welding, Welding defects & their remedy, Welding safety and industrial safety etc.</p>
40	<p>Course Code: IC-U336</p> <p>Factory automation using latest PLC with SCADA Participants : Junior & Mid-level officers Duration : 02 ~ 07 Nov, 2019 Course Fee : Tk. 9,400/- Per Participant</p>	<p>Introduction to Mitsubishi, Allen Bradley and Siemens PLC, Hardware description and programming software of PLC, I/O addressing, Program developing and graphic panel designing using SCADA software, Operation of a level process station by advanced PLC, Troubleshooting & maintenance of PLC.</p>
41	<p>Course Code : EE-U121</p> <p>Starting & Control Techniques of Industrial Motor Participants : Operator/Technicians Duration : 02 ~ 07 Nov, 2019 Course Fee : Tk. 7,800/- Per person</p>	<p>Introduction to starting & control techniques of Industrial Motors; Characteristics & Control Industrial Motors; Motor Control elements; Conventional Starting & control practice of induction motor; Practice on Motor control using AC/DC drive; Practice on Motor control using PLC.</p>

<p>42</p>	<p>Course Code: CI- U302</p> <p>Computer Maintenance & Troubleshooting Participants : Junior & mid-level officers Duration : 02 ~ 07 Nov, 2019 Course Fee : Tk.7,800/- Per person</p>	<p>Introduction to computer Types: Familiarize with different types of computer, Choice proper type of computer for use, understanding the benefits of each type computers; Structure of personal computers: Understand hardware parts of computer- Meaning of Main body, Monitor, Keyboard, Printer, Speaker, Microphone, Router, and other peripherals, Understand software parts of computer- Meaning of BIOS(Basic Input Output System), Drivers, OS(Operating System), and Applications software(MS-office etc.); Understanding of PC Components: Main board, Power Supply, CPU, RAM, HDD, ODD, SSD, Video Card, LAN card. Monitor, Keyboard, etc.; Internal structure of PC main body: Functions of Main Board, Power Supply, CPU, HDD, RAM, Video Card, Floppy, CD/DVD drive, several interfaces, etc.; Selecting the parts suitable for purpose: Understanding of motherboard components term(CPU, FSB, Memory, AGP, PCI, North Bridge, South Bridge, IDE, ATA, SATA, USB, Ethernet, Audio Codec, BIOS, LPC bus, ISA Bus, PC/AT bus, and CMOS; Other capabilities of the components (Power supply, Graphic card, ODD, SSD, Sound card, LAN card, etc.) ; Disassembling and Assembly PC: Safety rules about computer repair, How to avoid an electric shock, Understanding of functions of major components (Main body, Power Supply, CPU, RAM. HDD, ODD, SSD, Video Card, LAN card, Monitor, Keyboard, Speaker, Microphone, etc.); PC Repairing: Reset Settings (BIOS setup, etc.), How to check PC using the diagnosis program, Checking the appearance of parts, Inspection of assembled parts.</p>
<p>43</p>	<p>Course Code : IS-U114</p> <p>Industrial Safety in Mechanical Maintenance Participants : Operator/Technicians Duration : 02 ~ 07 Nov, 2019 Course Fee : Tk. 7,800/- Per person</p>	<p>Introduction to industrial safety & safety regulations, Safety in mechanical maintenance, Safe working practice during welding and fabrication, Safe use of hand tools & portable tools, Arrangement of scaffolding works & work platforms, Personal protective equipment, Safety measures associated in confined spaces, Safe handling of gas & gas cylinders, Danger of chemicals and their associated fire and explosion hazards and Electrical safety, Corruption issue & Quality of governmental services along with demonstration on Safe use of hoisting & transportation equipment and ladder practice, fire & explosion hazards and practice on different portable fire extinguishers, fixed fire extinguishing system, fire alarm system without FACP, different safety equipment & PPE, rescue operation.</p>
<p>44</p>	<p>Course Code: PT- U104</p> <p>Pumps: Operation & operation behavior Participants : Operator/Technicians Duration : 17 ~ 28 Nov, 2019 Course Fee : Tk. 12,300/- Per Participant</p>	<p>Introduction, Working Principle and Classification of Pumps; Process symbols and process diagrams; Major Components of pumps and their functions; Pump Characteristics; Lubricants and Lubrication of Pump; Bearing and Seal system of Pump; Measuring, Indicating and Recording Instrument; Standard Operating Procedure (SOP) of pump; Selection of Pump; Troubleshooting of Pump; Sequential Logic Operation; <i>Industrial safety</i>; Lab practice on process symbols and process diagrams; a) Relation between Flow rate(Q) and Head (H) of centrifugal pump b) Effect of Speed(N) on Q~H curve of centrifugal pump; Speed(N) vs. Head (H) and Speed (N) vs. Capacity (Q) relations of centrifugal pump; c) Comparison of Energy consumption at constant delivery through different diameter pipelines d) Parallel and Series connection of two similar pumps; e) Influence of bubbles, suction head position etc. On pump capacity; f) Determination of Line characteristics at different Speed(N) and its effect on delivery; Determination of Density, Viscosity and Flash point of Lube oil.</p>

45	<p>Course Code : CE-U309</p> <p>Environmental Pollution Monitoring and Control Participants: Junior & Mid-level officers Duration : 23 – 28 Nov, 2019 Course Fee : 7,800/- Per person</p>	<p>Principles of pollution prevention & environmental policy analysis, Pollution prevention on a selected industrial sector in Bangladesh, Commonly applied wastewater treatment process /technologies. Practice on technology and design a wastewater treatment train, Sludge handling and treatment processes, Air pollution monitoring & treatment technique.</p>
46	<p>Course Code : EE-U314</p> <p>Transformer: It's Use , Operation, Troubleshooting & Maintenance Participants: Junior & Mid-level officers Duration : 23 – 28 Nov, 2019 Course Fee : 7,800/- Per person</p>	<p>Principle of transformer operation, functional description and application of various types of transformers. Tap Changers & termination, Cooling & protection system, Vector grouping & parallel operation of transformers. Testing & purification of transformer oil. Detection of mechanical electrical and magnetic circuit problems. Preventive & corrective maintenance of transformer. Hands-on practice on transformer operation & maintenance.</p>
47	<p>Course Code : IS-U301</p> <p>Industrial Safety & Prevention of Accidents Participants : Junior & Mid-level Officers Duration : 01 ~ 12 December, 2019 Course Fe : Tk. 12,300/- Per person</p>	<p>Industrial hazards & safety requirements, Safety regulations & safety signs, accident & its prevention, fire & explosion hazards, chemical & acoustic hazards, electrical hazards & safety precautions, Personal protective equipment, housekeeping and its importance, safe handling of gas cylinders, safety measures associated with confined space etc. along with practical sessions related to safety, Fire alarm system, various types of up-to-date safety equipment & Personal protective equipment and rescue operation.</p>
48	<p>Course Code : CI- U303</p> <p>Computer Networking & Maintenance Participants : Junior & Mid-level Officers Duration : 07 ~ 12 December, 2019 Course Fee : Tk.7,800/ Per Participant</p>	<p>Understanding of Network: Concept of Communication protocol and the TCP/IP, OSI reference model, Feature of the network topology, Types of Network, Network Components ; LAN cable manufacturing: Performance index of the UTP Cable, The difference between Baseband & Broadband, Kinds of UTP cable, Local Area Network (LAN) Cables for PC to PC, Local Area Network (LAN) Cables for PC to HUB, Local Area Network (LAN) Cables for HUB to HUB ; LAN Network installation & IP Configuration: Understanding of Bulletin board, mini-homepage, blogs, mini blogs, and virtual meeting space, Function of the switching hub and Network Router, installation of Local Area Network (LAN), configuration of IP addresses, test IP addresses & communication ; Network router installation & configuration: installation of Router, configuration of IP addresses, test signal, password & communication ; Wireless AP / LAN: How to firewall settings, How to Set Up Wireless LAN Card Mode, How to Set Up Access Point Mode, installation of WAP, Configuration of IP addresses, test signal, password & communication; Network Troubleshooting: Diagnosing the connection status, Computer configuration problem ; Setting Internet start page: Entering the desired start page, Fixing the Start Page</p>