FIRST TRAINING SEMESTER

Course Title: Turbine (1)
Course Code: PO 103
Lecture Hours: 3
Practical Hours: 2
Total Hours: 5

Course Description: The objective of this course is to illustrate to the trainees turbine components and auxiliaries, also turbine operator responsibilities and power station visits.

Course Title: Engineering Drawings (1)
Course Code: PO 112
Lecture Hours: 0
Practical Hours: 4
Total Hours: 4

Course Description: The objective of this course is to illustrate to the trainees how to draw projections, hide lines, isometric and plan view, side view and engineering symbols.

Course Title: Thermodynamics (1)
Course Code: PO 114
Lecture Hours: 3
Practical Hours: 0
Total Hours: 3

Course Description: The objective of this course is to illustrate to the trainees with ideal gas properties, ideal gas process at constant pressure, volume, temperature, throttling and adiabatic process.

Course Title: Industrial Safety
Course Code: PO 266
Lecture Hours: 2
Practical Hours: 0
Total Hours: 2

Course Description: The objective of this course is to illustrate to the trainees the modes, safety tools and protective methods from risks and modes to aide and different method for fire fighting on working layout.

Course Title: (Boilers (1)
Course Code: PO 101
Lecture Hours: 3
Practical Hours: 2
Total Hours: 5

Course Description: The objective of this course is to teach the trainees the different type of power station and kinds of boiler and components between them also auxiliaries component such as valves and pipes with their purpose & power plant visits.

Course Title: Technical Mathematic(1)
Course Code: MA 104
Lecture Hours: 3
Practical Hours: 0
Total Hours: 3

Course Description: Algebraic amounts - Equations of second order degree - Cartesian coordinates - static

Course Title: Introduction to Computer
Course Code: CS 101
Lecture Hours: 0
Practical Hours: 2
Total Hours: 2

Course Description: Computer (definition, consistence, and operation system - Windows-Microsoft, saving, and typing reports - shifting through files, tables preparation.

Course Title: Water Technology
Course Code: WD 102
Lecture Hours: 3
Practical Hours: 0
Total Hours: 3

Course Description: Heat exchanger - Sea water cycle - Recirculating cycle - distillate water cycle - type of pump - parts of pumps - types of fans - ground reservoir - water towers.

SECOND TRAINING SEMESTER

Course Title: Boilers (2)
Course Code: PO 151
Lecture Hours: 4
Practical Hours: 2
Total Hours: 6

Course Description: The objective of this course is to teach the trainees the auxiliaries such as condenser, turning gear, heat exchanger, air ejector, steam system, circulating sea water cooling system.

Course Title: Steam Turbines (2)
Course Code: PO 164
Lecture Hours: 3
Practical Hours: 0
Total Hours: 3

Course Description: The objective of this course is to teach the trainees the first & second thermodynamic laws and main concepts, steam generation, study the steam process at constant pressure - volume, temperature.

Course Title: Diagrams Reading
Course Code: PO 168
Lecture Hours: 2
Practical Hours: 0
Total Hours: 2

Course Description: The objective of this course is to teach the trainees symbols of equipment and instruments, types of drawings and diagrams, reading the diagrams of power station.

Course Title: Technical Mathematic(2)
Course Code: MA 154
Lecture Hours: 3
Practical Hours: 0
Total Hours: 3

Course Description: Triangles calculation - Vector - Complex numbers - Calculations and integrations

Course Title: English Language(2)
Course Code: EN 166
Lecture Hours: 1
Practical Hours: 2
Total Hours: 3

Course Description: Text from a first Course in Technical English Book (2) with a view to furnishing the trainer with terminology in the area of specialization Teaching of extracts from the new horizon series book (2) together with exercises.

Course Title: Chemistry
Course Code: WD 162
Lecture Hours: 4
Practical Hours: 2
Total Hours: 6

Course Description: Chemical treatment in power stations to overcome reeling problem on the surface of heating conduction materials concerning the problem of corrosion of boiler pipes- fitting pipes and detecting the capacitors-water types treatment- organic chemistry - organic material structure - paraffin-olefins- acetylene.

Course Title: pumps and valves
Course Code: WD 156
Lecture Hours: 2
Practical Hours: 2
Total Hours: 4

Course Description: pumps type - pump parts - centrifugal pumps types - operation - characteristic curve- Cavitation- net positive suction head - positive displacement pumps types and operation.
### THIRD TRAINING SEMESTER

<table>
<thead>
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<th>Course Title</th>
<th>Course Code</th>
<th>Lecture Hours</th>
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<td>Steam Turbines</td>
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<td>Gas Turbines</td>
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**Course Description**

- Thermodynamics: The objective of this course is to illustrate the trainees the steam cycles such as Carnot, Rankine, Reheat, Regenerative cycle and the methods of improving the efficiency of power plant & condensers.
- Steam Turbines: The objective of this course is to illustrate the trainees high capacity of boilers (300 MW) and auxiliaries, feed water, steam generation, auxiliaries steam, soot blowing, tracing steam and clean drain systems.
- Gas Turbines: The objective of this course illustrate to the trainees the high power modern turbines (300 MW), the condenser, condensate system & how to half section isolated and normalized, lub. Oil, sea water, vacuum, gland steam and emergency systems.
- Boilers: The objective of this course illustrate the trainees high capacity the boilers (300 MW) and auxiliaries, feed water, steam generation, auxiliaries steam, soot blowing, tracing steam and clean drain systems.
- Fluid Mechanics: Fluid mechanics units - Basic of fluid mechanic – Bernoulli theory.
- English Language: Teaching materials based on the series (MAMILAN CAREER ENGLISH-ELECTRICAL ENGINEERING) designed to familiarize trainees with idioms and technical terminology in his professional field.

### FOURTH TRAINING SEMESTER

<table>
<thead>
<tr>
<th>Course Title</th>
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<td>Mechanical Measuring Instrument</td>
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**Course Description**

- Steam Turbines: The objective of this course illustrate to the trainees the methods of turbine operation and start up & shut down program of turbines, also the protection systems, type of tests, control system and emergency shut down reasons and how to avoid it.
- Heat Transfer: The objective of this course illustrate the trainees heat transfer methods such as conduction, convection & radiation and heat transfer through the combined walls, heat exchangers and their types and used, also make tests.
- Gas Dynamics: The objective of this course illustrate the trainees types of internal combustion engine, Air standard ideal cycle which used of internal combustion engine and gas turbine and how to improve efficiency.
- Fluid Mechanics: Bernoulli’s theory - Bernoulli’s equation - Practical application of Bernoulli’s equation.
- English Language: Teaching material based on information presented in power plants electrical fundamentals (book 6) on power plant operator duties, instrument information- systems follow up - detects problems, idioms and technical terminology.