



# Employability Enhancement Program for Engineers

Transformation of an engineering degree holder to a  
real Engineer, who can do more at work.



## EEP- Introduction

The engineering curriculum followed by most of the universities are currently not aligned with the industry expectations for providing employment for engineers. EEP is an exclusive program for Omani Engineers, supporting to bridge the knowledge and skill gaps of engineering graduates in line with the employers' expectations.

The EEP is aimed to provide basic understanding on practical applications of Engineering, Health & Safety management and Behavioural skills that is essential for every engineer to have, before taking up employment with any organisation. The program EEP will improve the employability of an engineer and helps industries to deploy the newly selected engineers at work directly and focus on their further development.

Any development programs designed for enhancing the capability of engineers need to focus the deliverables of engineering graduates at work. In general as routine activities, an Engineer at work is not expected to use spanners, screw drivers or open & close valves in process plants. Engineers' deliverables include, review and update procedures, provide technical input in design and operations support, make various decisions, manage HSE practices, manage operation and maintenance of plant equipment, etc. Engineers need to have high level of technical understanding to deliver engineers' role efficiently.

EEP will be delivered by engineers having many years experience in training and assessment with major national and international companies including SHELL, PDO, BP, OXY, BPCL, ONGC, etc.

This program is designed to deliver interactive sessions with many relevant case studies, videos, assignments & exercises for groups and individuals.

## EEP- Objectives

The objectives of EEP includes but not limited to the followings;

- **Develop engineers' competency to deliver Engineers' jobs**
- Develop abilities to lead/work in teams.
- Develop the Technical, HSE & Behavioral skills of engineers to a level that is required by industries to recruit & deploy them at work.
- Provide relevant practical/hands on training to comprehend the engineering curriculum that is followed by Omani engineers.
- Provide opportunity for Omani engineers to understand the standards & best practices followed by process industries in Engineering, Construction, Operations & Maintenance related activities.
- Provide capability to handle all types of tasks by applying basics of project management
- Enhance the behavioural skills to take Ownership, Responsibility, Accountability and Punctuality at work.
- Provide an understanding on types of jobs available for engineers with various industries relevant to their engineering discipline.
- Develop skills to effectively communicate and present including Technical report writing.
- Build the confidence to face interviews and readiness to take up jobs with Process industries.
- Ability to read drawings, read & understand technical documents relevant to the discipline.
- Basic understanding on the various HSE tools & techniques used for HAZOP, HAZID, PTW, IPF, Process Safety, Electrical Safety Rules, etc relevant to candidates discipline.

## Engineers' Deliverables

**Engineers' deliverables** includes but not limited to:

- Provide technical input / involve in;
  - Design ( HAZOPs, HAZID, IPF, Bow-Ties, review drawings & procedures, equipment/material selection, etc.)
  - Operation Engineer /support role
  - Optimisation of process plants
  - Maintenance activities
  - Procurement, Construction & Commissioning
  - Technical documentation
  - Decision making, etc.
- Review documents/Procedures
- Lead teams, Delegate, Motivate
- Supervise plant equipment Ops/maintenance
- Plan & Schedule
- Man management
- Performance management
- Link between senior management & sub ordinates, etc.

## EEP Modules

The EEP is providing basic capability development in following areas;

- **Engineering Skills:** Discipline specific and work focused engineering skills
- **Behavioral skills:** Developing the basic behaviors accepted by industries
- **HSE Skills:** HSE practices in industries

## Engineering Disciplines

The EEP program currently targets to develop the capabilities of engineering graduates in the following disciplines;

- 🌐 Chemical / Petroleum /Process
- 🌐 Instrumentation Engineering
- 🌐 Electronics & Electrical
- 🌐 Electronics & Communications
- 🌐 Applied Electronics & Instrumentation
- 🌐 Electrical Engineering
- 🌐 Mechanical Engineering

## Potential Industries

The EEP is focused to develop the basic capability of engineers to secure employment with the following types of Industries in Oman.

- 🌐 Engineering Consultancy firms
- 🌐 Construction Companies
- 🌐 Oil Refineries
- 🌐 Oil & Gas exploration and production Companies
- 🌐 Fertilizers & Petrochemicals
- 🌐 Power & Utility Industries
- 🌐 Chemical Industries
- 🌐 Electricity Generation & Distribution firms
- 🌐 Electronics Industries & Major IT firms, etc.

### Types of Modules

### Number of Modules

### Delivery

**Advanced Engineering skills**

**8**

**Discipline specific**

**Behavioral Skills**

**4**

**Common for all**

**HSE skills**

**4**

**Common for all**

# Discipline specific Engineering Modules

## Process/chemical/Petroleum

1. Basics of Oil & Gas Exploration, Drilling, Production & Processing Operations and Economics.
2. Basics of Oil Refining , Petrochemical , Chemical industries in Oman
3. Reading all kind of technical drawings & documents
4. Fundamentals of Process Design
5. Heat & Mass transfer equipments in Process industries: Types, Design, selection, Operation & Maintenance
6. Fundamentals of Process Instrumentation & Control Systems
7. Design, Selection and Operation of Pumps, Compressors & Gas Turbines.
8. Basics of process Safety, HAZID, HAZOP & Bow-Tie Analysis for Engineers.

## Mechanical Engineering

1. Industrial Applications of Mechanical engineering
2. API standards & Design of pipelines
3. Auto CAD & different types of drawings.
4. Basics of Oil & Gas Production and Refining Operations.
5. Basics of CMMS, RBI, RCM and modern maintenance Management.
6. Basic Metallurgy , Corrosion issues and material selection for various industries.
7. Design, Selection & Operation of Pumps, Compressors & Gas turbines
8. Design & Construction of Static equipment: Tanks and Process vessels.

## Instrumentation /Electronics /Communication

1. Introduction to Industrial Automation & Controls
2. Design, selection & Installation of Instrumentation systems for Industries.
3. Instrumented Safeguarding Systems-IPF, SIS & SIL classifications
4. DCS, PLC & SCADA systems in Industrial applications.
5. Basics of Oil & Gas Production and Refining Operations.
6. Flow, Temperature, Pressure & Level Measurement System, Controllers and Final Control Elements“
7. Data handling, Network Security & Protection Systems.
8. Basics of process Safety, HAZID, HAZOP & Bow- Tie Analysis for Engineers

## Electrical Engineering

1. Industrial applications of Electrical engineering.
2. Electrical Drawings & Control Circuits
3. Power Generation, Transmission & Distribution Systems.
4. Electrical Protection Systems
5. Working on Electrical Systems in Hazardous Area
6. Electrical Safety Rules and Safe Operating procedures for Low Voltage & High Voltage Systems
7. Inspection, Testing and Commissioning of Industrial Electrical equipment.
8. Basics substations Ops & Maintenance.

EOP is the **first comprehensive program** in Oman designed & developed jointly by **OPAL & TRACEZ Oman** to enhance the basic capability of engineers by providing training in discipline specific & job focused engineering, basic behavioral skills & fundamentals of industrial safety.

# Discipline specific Engineering Modules

## Behavioral Skills

- Develop punctuality, Responsibility, Accountability & Ownership, Work culture, etc.
- Technical English, Communication & Presentation skills including Report writing.
- Basics of Project management
- Basics of Time and Performance management
- Basics of Lean Sigma
- Entrepreneurship skills development
- Basic Finance management in industries
- Confidence building, skills to face interviews, etc.

All the above capabilities will be covered in 4 Modules.

## HSE Modules

- HSE Management in Industries,
- General Safety for Industries – HSE procedures, policies & PPEs
- Roles & responsibilities of individuals on HSE,
- Permit to Work systems, HSE documentations,
- Hazard Identification & Risk Management,
- Safety Leadership & Management
- HSE Tools & Skills for Engineers, etc..

All the above areas will be covered in 4 Modules.

## Benefits for Industries

- Industries can deploy the new engineers who completed EEP at work directly and focus for further development.
- EEP can be customised as per specific industry requirement.
- Huge financial savings as not required to maintain a full fledged training department.

## EEP- Training Methodology

**Classroom training** includes;

- 40 % Lectures & Power point presentations
- 40 % practical activities
- 10% case studies
- 10% Pre & Post course assessments
- Participants DO and LEARN. Learner lead learning events.
- Opportunity to interact and learn from highly experienced professionals from various industries and disciplines.
- All modules will be developed in technical English and customised to suit the standards of Omani Engineers
- Program delivered by using Multimedia methods
- Interactive sessions lead by trainers involving candidates in every stage of program delivery.
- Systematic Assessment for each modules
- International Accreditation & Certification will be provided.
- EEP is not just classroom lectures with slide shows, but candidates learn by doing

**Field / Practical Training**

- Opportunity to visit the process facilities and workshops associated with TRACEZ and work with engineering consultancy firms.
- Task books will be provided in line with the field visits
- Trainers will accompany the candidates during field visits.
- KPIs will be set for field visits and will be part of assessment.

## Assessment & Certification

All participants will be provided with “Successfully completed course” certificate for those who satisfy the following conditions

- 100% attendance in the class
- Active participation in the discussions
- Submit all the course work and assignments
- Successful completion of the End of course Assessment
- Complete the activities listed in the Task book, during field training, etc.



## Enrolment of candidates

### **Sponsored by business establishments:**

Those organisations interested to admit their newly recruited engineers for EEP is requested to contact either OPAL or TRACEZ Oman directly. EEP can be customized to organisations requirement depending up on the number of candidates.

### **Selection & Recruitment by EEP Team**

OPAL/TRACEZ team can select candidates on behalf of any business establishment, provide EEP training and send to the sponsor after completion

### **Direct joining:**

Individuals can join directly either by registering on TRACEZ website or by sending the filled in application by E mail

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