

**PETROLEUM INDUSTRY**

**“Higher National Diploma (HND) in Processing Engineering”**

**OUTLINE:**

**1. Petroleum Engineering Fundamentals:**

- Introduction to petroleum industry and processes
- Petroleum geology and exploration techniques
- Reservoir engineering and fluid properties
- Well drilling and completion

**2. Petroleum Refining and Processing:**

- Refinery operations and unit processes
- Crude oil distillation and fractionation
- Catalytic cracking and hydroprocessing
- Refinery product blending and specifications

**3. Petrochemicals and Chemical Processing:**

- Introduction to petrochemical industry
- Petrochemical feedstock and production processes
- Polymer production and processing
- Specialty chemical production and applications

**4. Process Control and Instrumentation:**

- Principles of process control systems
- Instrumentation and measurement techniques
- Distributed control systems (DCS)
- Safety instrumented systems (SIS)

**5. Process Safety and Risk Assessment:**

- Hazard identification and risk assessment methods
- Safety in petroleum refining and petrochemical plants
- Process safety management systems
- Emergency response planning and incident investigation

**6. Environmental Protection and Sustainability:**

- Environmental impact assessment in the petroleum industry
- Pollution prevention and control measures
- Energy efficiency and conservation
- Sustainable practices in refining and petrochemical processes

**7. Industrial Training and Project:**

- Practical training in a petroleum processing facility
- Industrial project to apply knowledge and skills acquired throughout the program.

**PETROLEUM INDUSTRY**

**“Higher National Diploma (HND) in Processing Engineering”**

**SYLLABUS:**

| <b>MAIN TOPIC</b>                                  | <b>SUBJECTS</b>   | <b>CREDIT HOURS</b> |
|--|---|---------------------|
| <b>Petroleum Engineering Fundamentals</b>          | Introduction to petroleum industry and processes.                                 | <b>9</b>            |
|  | Petroleum geology and exploration techniques.                                     |                     |
|  | Reservoir engineering and fluid properties.                                       |                     |
|  | Well drilling and completion.   |                     |
| <b>Petroleum Refining and Processing</b>           | Refinery operations and unit processes.   | <b>9</b>            |
|  | Crude oil distillation and fractionation.   |                     |
|  | Catalytic cracking and hydro-processing.  |                     |
|  | Refinery product blending and specifications.                                     |                     |
| <b>Petrochemicals and Chemical Processing</b>      | Introduction to petrochemical industry.   | <b>9</b>            |
|  | Introduction to petrochemical industry.   |                     |
|  | Petrochemical feedstock and production processes.                                 |                     |
|  | Polymer production and processing.  |                     |
| <b>Process Control and Instrumentation</b>         | Specialty chemical production and applications.                                   | <b>9</b>            |
|  | Principles of process control systems.  |                     |
|  | Instrumentation and measurement techniques.                                       |                     |
|  | Distributed control systems (DCS).  |                     |
| <b>Process Safety and Risk Assessment</b>          | Safety instrumented systems (SIS).  | <b>9</b>            |
|  | Hazard identification and risk assessment methods.                                |                     |
|  | Safety in petroleum refining and petrochemical plants.                            |                     |
|  | Process Safety management systems.  |                     |
| <b>Environmental Protection and Sustainability</b> | Emergency response planning and incident investigation.                           | <b>6</b>            |
|  | Environmental impact assessment in the petroleum industry.                        |                     |
|  | Pollution prevention and control measures.  |                     |
|  | Energy efficiency and conservation.   |                     |
| <b>Industrial Training and Project:</b>            | Sustainable practices in refining and petrochemical processes.                    | <b>21</b>           |
|  | Practical training in a petroleum processing facility.                            |                     |
|  | Industrial project to apply knowledge and skills acquired throughout the program. |                     |