

## **CH404 PROCESS EQUIPMENT DESIGN – I**

**Credits: 4 (L = 2, P = 4)**

**(Pre-requisite: None)**

### **Course Details:**

#### **Detail 1:**

Various code and standards for pressure vessel; design considerations and factors influencing design of unfired pressure vessels; materials of construction, type and selection; fabrication of process equipment; unfired pressure vessels with internal pressure; unfired pressure vessels with external pressure; end closures-types, considerations for selection, design under internal pressure and external pressure; testing of pressure vessels; pressure relief devices for pressure vessel; computer aided design of pressure vessels.

#### **Detail 2:**

Non-pressure storage tanks- type and design; design of tall vertical vessels; vessels supports type, selection and design.

#### **Detail 3:**

Flanges and gaskets-types, selection and design; nozzles and nozzle compensation.

#### **Detail 4:**

Design of equipment parts- agitated vessels, heat exchanger, and distillation columns.

#### **Detail 5:**

High-pressure vessels- theories of elastic failure, mono-block and multi-layer construction, materials of construction, enclosures for high-pressure vessels.

### **Reference Books:**

#### **Process Equipment Design:**

**John Willey**

*Brownell and Young*

#### **Process Equipment Design:**

**CBS Publications**

*B. C. Bhattacharya*

#### **Process Equipment Design:**

**MacMillan**

*M. V. Joshi*