

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN METTALLURGY ENGINEERING
SEMESTER: V

Subject Name: **Rolling of Steel Products**

Sr. No.	Course Content
1.	Introduction: 1.1 Introduction to rolling as a metal shaping process with advantages and limitations. 1.2 Steel and its ingots structure. 1.3 Heating of steel for rolling. 1.4 Plastic working of steel (Metallurgical aspects). 1.5 Hot and cold rolling.
2.	Rolling Mills: 2.1 Theory of rolling. 2.2 Types of rolling mills based on design. 2.3 Equipment in rolling mills- Tools, Guides, Rolls, Materials there of. 2.4 Operations of different types of rolling mills. 2.5 Automation and mechanization of rolling mills.
3.	Rolling of Steel Products: 3.1 Types of products obtained by rolling. 3.2 Flat products. 3.3 Tubular products. 3.4 Special shapes. 3.5 Sections. Manufacture of above products with reference to path sequence and procedural steps involved.
4.	Post Rolling Treatment: 4.1 Heat treatment. 4.2 Finishing.
5.	Defects and Quality Controls in Rolling: 5.1 Inspection of defects. 5.2 Visual and microscopical examinations. 5.3 Destructive testing. 5.4 Non destructive testing.

Laboratory Experiments:

1. To study the classification of rolling mills based on products.
2. To study and draw rolling mills of different mill designs.
3. To draw and understand main drive of rolling mill and roll design.
4. Prepare path sequence for manufacture of Blooms, Billets, and Slabs.
5. To study path sequence for manufacture of tubes.
6. To study path sequence for manufacture of special shapes:(Wheels, Tyres, Rail products)
7. To study path sequence for manufacture of sections: I beam, Channels, Angles and squares.
8. To study path sequence for Heat treatment of rolled products.
9. To study and understand defects in rolled products.