

Metallurgy Courses by TCR Arabia

Metallurgy for Non-Metallurgists

This course covers the following topics:

Introduction to Metals:

Scope and Applications, Important metals used.

Structure of Metals:

Crystal structure, thermal curve for solidification , simple binary diagrams, allotropic modifications of iron, iron carbon diagram, Various phases of iron, corresponding microstructures.

Steels:

Effect of alloying elements on the properties of iron, major types of steels, Stainless steels.

Heat Treatment of Metals:

TTT and CCT diagrams, Hardenability, different heat treatments for steel, procedures, equipments, quechants, Introduction to case and surface hardening.

Non-Ferrous Metals:

Industrial applications, major groups, heat treating procedures.

Casting Methods and Cast Irons:

Sand casting, die casting, centrifugal casting, investment casting, processing of castings. Types of cast irons, micro-structural features and salient characteristics.

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This course covers the following topics:

Metal Forming:

Cold and Hot working, Forging, rolling, extrusion and swaging at high temperature. Cold rolling, wire drawing, cutting piercing etc.

Joining:

Basic of welding, sources of energy, methods of shielding, types of welding methods, SMAW, GTAW, GMAW , SAW. Methods of cutting.

Performance during Service:

Failure of metals during service, Failure modes, Failure due to Fatigue, Wear and high temp, Definition of corrosion, different types, methods of prevention.

Mechanical Testing & NDT:

Description of testing methods, NDT methods.

The duration of this course is 3 days and it is conducted by a Senior Metallurgist. Students will be given a course completion certificate at the end of this course.