SCANDINAVIAN ACADEMY
For Training and Development

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Course: Metallurgy for Non Metallurgists

Code	City	Hotel	Start	End	Price	Language - Hours
538	Brussels (Belgium)	Hotel Meeting Room	2025-08-04	2025-08-08	5950 €	En - 25

Course Introduction:

Metallurgy is a critical field that impacts numerous industries, from manufacturing and construction to aerospace and automotive sectors. For professionals without a metallurgy background, understanding the fundamentals of metals, their properties, processing methods, and applications is essential for making informed decisions in engineering, procurement, quality control, and production management.

This training program provides a comprehensive introduction to metallurgy, focusing on metal properties, alloy selection, heat treatment, failure analysis, and quality control techniques. Participants will gain practical knowledge that enhances their ability to work effectively with metals in various industrial applications.

Course Objectives:

By the end of this course, participants will be able to:

- Understand the basic principles of metallurgy and material science.
- Identify different types of metals and alloys and their applications.
- Recognize the impact of heat treatment and processing on material properties.
- Analyze metal failures and implement quality control techniques.
- Apply metallurgical knowledge in manufacturing, engineering, and product development.

Target Audience:

- Engineers and Technicians (Mechanical, Civil, Electrical, and Industrial)

- Quality Control and Inspection Personnel
- Procurement and Supply Chain Professionals
- Manufacturing and Production Supervisors
- Research and Development Professionals
- Anyone involved in working with metals and materials

Course Outline

Introduction to Metallurgy and Materials Science

- Fundamentals of metallurgy and the role of metals in industries
- Classification of metals: Ferrous vs. Non-Ferrous materials
- Basic properties of metals: Strength, hardness, toughness, ductility
- Overview of metal extraction and processing techniques

Metal Alloys and Their Applications

- Alloying principles and how they affect material properties
- Steel types and classifications (carbon steel, stainless steel, tool steel)
- Non-ferrous metals: Aluminum, copper, titanium, and their industrial uses
- Material selection criteria for engineering applications

Heat Treatment and Material Processing

- Fundamentals of heat treatment: Annealing, quenching, tempering, hardening
- Effect of heat treatment on mechanical properties
- Metal forming processes: Casting, forging, extrusion, rolling
- Welding and joining techniques for metals

Metallurgical Failure Analysis and Quality Control

- Understanding metal fatigue, corrosion, and wear

- Causes and prevention of common metal failures
- Non-destructive testing (NDT) and material inspection techniques
- Case study: Metallurgical failure analysis in industrial applications

Advanced Metallurgical Techniques and Innovations

- Emerging trends in metallurgy and material science
- Additive manufacturing (3D printing) and its impact on metals
- Nanotechnology applications in metallurgy
- Sustainability and recycling of metals
- Metallurgy in manufacturing, construction, and automotive industries
- Best practices in material handling and quality assurance
- Troubleshooting metallurgical problems in production

The Scandinavian Academy for Training and Development adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training and Development.

Program Timings:

- 9:00 AM to 2:00 PM in Arab cities.
- 10:00 AM to 3:00 PM in European and Asian cities.

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.