This one day technical course provides fundamental knowledge of the principles of casting and provides an overview of most casting processes available from basic sand casting, die casting to investment casting.

Course aims
The course is designed to have a wide appeal and caters for everyone wishing to understand casting processes and rapid prototyping methods & techniques.

Who should attend
The course is suitable for shop floor operatives, technical or non-technical staff, management personnel, sales & marketing professionals and apprentices. No prior knowledge of casting processes is required.

Find out more: For further information please contact:
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Casting Processes & Techniques

Section 1: Sand Casting Processes
- Conventional sand casting
- Pattern production
- Sand moulding
- Green sand binders
- Chemically bonded sand binders
- Resin shells

Section 2: Die Casting
- Theory of die casting
- Gravity die casting
- Low pressure casting
- High pressure casting

Section 3: Investment Casting
- Ceramic shells
- Lost wax process
- Shaw process
- Lost foam process
- “Replicast”

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Section 4: Prototype Development

• Alternatives to traditional wooden patterns
• Rapid manufacture of disposable patterns
• Direct CNC machining of sand moulds
• Direct CNC machining of wax patterns

Section 5: Rapid Prototyping Techniques

• Additive layer prototyping
• Stereo-lithography
• 3D Sand printing
• CNC polystryene machining

Section 6: Prototyping Techniques

• Additive layer prototyping
• Stereo-lithography
• 3D Sand printing
• CNC polystryene machining
Casting Processes & Techniques

Learning Outcomes

• Understand the principles & practicalities of conventional sand casting
• Gain an appreciation of the theory and applications of die casting – gravity high pressure & low pressure
• Become familiar with investment casting operations
• Appreciate the modern alternatives to conventional CNC machining of prototypes
• Familiarisation with Additive Layer, stereo-lithography and other rapid prototyping technologies

Other Continuous Professional Development (CPD) Services

General Metallurgy
• Introduction to metals
• Fundamentals of metallurgy
• Metallurgy for non-metallurgists

Metals Processing
• Casting of metals
• Hot & warm forging
• Introduction to heat treatment
• Heat treatment for professionals
• Machining of metals
• Welding of metals
• Powder metallurgy
• Principles of heat treatment

Metals & alloys
• Carbon & alloy steels
• Stainless steels
• Titanium metallurgy
• Nickel metallurgy
• Aluminium metallurgy

Metals Applications
• Subsea application of metals
• Metals for aerospace
• Metals for gas turbine applications
• Materials for automotive
• Materials for nuclear
• Materials for medical

Apprenticeships
• Mechanical
• Electrical
• Manufacturing
• Materials
• Fabrication
• Machining
• Composites
• Design

In-Service Performance
• Introduction to corrosion
• Combating metal corrosion
• Introduction to fatigue
• Failure analysis & prevention
• Mechanical testing
• Non-destructive testing
• Quality assurance

Metals Technology Certificate
• Level 3 (A level)
• Self-study manual “Science & Engineering Principles”
• Select six one-day taught courses
• On-line assessment of all modules
• University of Sheffield Certificate on successful completion

Manufacturing Leaders Programme
(ILM level 3)
• Developing yourself
• Creating a high performance team
• Effective communication
• Conflict to compromise
• Getting the best out of your people
• Problem solving
• Production planning
• Maximising resources
• World class manufacturing
• Safety is no accident
• Customer is king
• Leading in a lean environment

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