

AFS Institute

Your Education Solution for Metalcasters, Suppliers & Casting Buyers

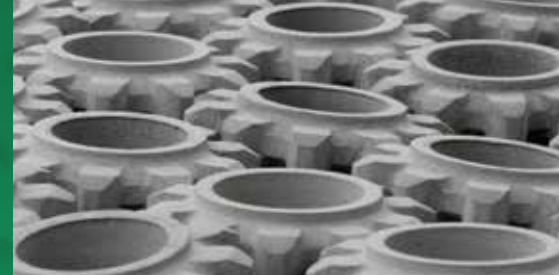
New Courses, New Opportunities

Plus:

- Casting Defect Analysis
- Casting Design
- Introduction to Metalcasting

New:

- Design & Optimization for 3D Sand Printing
 - Copper 101
- Iron Metallurgy 201
- Aluminum Crucible Furnace Practices



ADVOCATE. EDUCATE. INNOVATE.

www.afsinc.org • 800/537-4237

Our courses have been designed to follow the best practices in adult learning, providing opportunities for entry level knowledge and skills and building up to advanced technology and applications. Incorporated with your company's training program, this program of courses will provide a foundation of education for improved job performance and better company engagement.

2015 Education Calendar

August

August 4-5	Casting Defect Analysis	Schaumburg, IL
August 6	Iron 101	Schaumburg, IL
August 9-10	Environmental 101 Seminar	Marriott Park City, UT
August 11-13	Environmental, Health & Safety Conference	Marriott Park City, UT
August 11-13	Design & Optimization for 3D Sand Printing	Waterloo, IA
August 11	Copper 101	Schaumburg, IL
August 12-13	Gating & Riser Design	Schaumburg, IL

September

Sept. 1-2	Iron Metallurgy 201	Schaumburg, IL
Sept. 15-16	Nobake Molding & Coremaking 101	Schaumburg, IL
Sept. 22-23	Introduction to Metalcasting	Schaumburg, IL
Sept. 27-29	Foundry Executive Conference	Hilton Head Island, SC

October

Oct. 5-7	Design and Production of High Quality Aluminum Castings	Nashville, TN
Oct. 7-9	International Ferrous Melting Conference	Nashville, TN
Oct. 13	Ergonomics: Optimizing Efficiency, Quality & Safety	Schaumburg, IL
Oct. 14-15	Casting Design	Schaumburg, IL
Oct. 20-21	Casting Defect Analysis	Lancaster, PA
Oct. 27-29	Foundry Process Improvement	Schaumburg, IL

November

Nov. 3-4	Casting Defect Analysis	Neenah, WI
Nov. 17	Aluminum Crucible Furnace Practices	Schaumburg, IL
Nov. 18-19	Aluminum Metallurgy 201	Schaumburg, IL

Classroom Courses

Casting Defect Analysis #03-16

August 4-5 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

In order to determine the true root cause of a casting defect and select the proper corrective action, a systematic evaluation method must be applied. Implementing the wrong solution can cost the foundry in terms of runtime, cost, waste, safety, reduced return on investment or profit, sales and expertise. The intention of this course is for participants to become proficient in applying a ten-step procedure for correctly identifying defects and their root causes and determining appropriate corrective actions. This course is applicable to sand molding processes (green, nobake, coldbox, shell).

Instructors

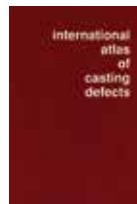
Kevin Fleischmann,
AFS Institute

Scott Lammers,
AFS and the Institute

Who Should Attend

The target audience for this course consists of individuals responsible for: managing and overseeing the production management staff; managing and supervising production staff; purchasing, sales, marketing or office operations; auditing/inspecting/quality control; production or engineering or design.

Two complimentary books with course registration. \$135 Value



**Casting defects
handbook
of your choice**

**Choose from
Iron & Steel,
Copper-Base Alloys or
Aluminum Alloys**

Course Information: The course will begin at 8:00 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Iron 101 #04-16

August 6 / Schaumburg, IL / Member \$725 / Non-member \$925

This is an introductory course covering the major cast iron families. Topics include characteristics and properties as well as general applications for each iron type, common alloying elements and their uses, iron melting technology and considerations, compatible casting processes, and heat treatment options and applications. Designed for those new to iron casting, case studies and group activities will be used throughout the course.

Instructors

Kevin Fleischmann,
AFS Institute

Scott Lammers,
AFS and the Institute

Who Should Attend

The target audience for this course consists of individuals responsible for: foundry production and management; process control; quality assurance; buying from casting suppliers; designing/engineering cast components; production and/or sales of supplies and services to the industry; new employees or anyone new to iron casting.

Course Information: The course will begin at 8:00 a.m. and end by 4:00 p.m. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Design & Optimization for 3D Sand Printing #05-16

August 11-13 / Waterloo, IA / Member \$1200 / Non-member \$1400

**NEW
COURSE**

There are many advantages to the use of 3D sand printing of molds and cores, especially when it comes to casting design, and the technology is being rapidly adopted in all sectors. This course focuses on designing castings for the 3D sand printing process, as well as optimizing existing designs to take advantage of the unique capabilities afforded. Topics covered include the advantages and limitations to the process; when to use the process; and important considerations such as communication, storage and handling of cores and molds, gating design and the use of simulation, file formats, and key features allowable. Case studies will be used throughout the course. This course will be held at the 3D sand printing center located at Techworks in Waterloo, IA.

Who Should Attend

Design engineers; tooling engineers; foundry engineers

Instructors

Steve Murray,
Hoosier Pattern Inc.

Brandon Lamoncha,
Humtown Products

Jiten Shah,
Product Development
& Analysis, LLC.

Jerry Thiel
University of Iowa



Course Information: The course will begin at 8:30 a.m. on the first day and end by 3:00 p.m. on the third day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Copper 101 #06-16

August 11 / Schaumburg, IL / Member: \$725 / Non-member: \$925

This course provides participants an introduction covering the characteristics and properties of copper, alloying elements and their general applications, and considerations for working with cast copper parts. This course also covers melting and casting technology and looks at the decision-making process behind specific technologies used.

Benefits to taking this course include practical and theoretical knowledge for those entering into or establishing relationships with others in the copper casting business. It provides a comprehensive foundation of the processes, treatments and practical applications of cast copper, and walks the participant through decisions that affect final product cost. This course also serves as a prerequisite for other copper courses.

**NEW
COURSE**

Who Should Attend

Management—all levels; production engineers; production personnel new to working with copper; technical sales staff; purchasing staff; design engineers.

Instructor

Kumar Sadayappan,
CAN-MET MTL



CanmetMATERIALS / CanmetMATÉRIAUX

Course Information: The course will begin at 8:00 a.m. and end by 4:00 p.m. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Classroom Courses

Gating & Riser Design #07-16

August 12-13 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

This course, for horizontal sand molding applications, will cover both ferrous and nonferrous theory and practice. Topics covered include turbulence, solidification, shrinkage, metallostatic pressure effects, gating and riser system design and calculations, mold-wall movement and computer modeling, pouring times, and placement and feeding distance of risers.



Instructor

Kevin Fleischmann
AFS Institute

Who Should Attend

Foremen, patternmakers, foundry engineers, supervisors, metallurgists, quality control personnel and estimators.

Course Information: The course will begin at 8:30 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Iron Metallurgy 201 #08-16

September 1-2 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

This course will provide participants with knowledge and skills regarding terminology, principles, and techniques for the metallurgy of gray and ductile iron casting alloys. This practical course makes clear the reasons why foundry personnel "do what they do" in relation to iron casting metallurgy. This course examines gray and ductile iron structure and properties; how to interpret (read) single and two component phase diagrams and recognize characteristics from microstructures; solidification behaviors and reactions; preparation and analysis of metallographic samples; iron casting defects specifically related to metallurgy; and more. Please review the learning outcomes on the course syllabus, available online.

**NEW
COURSE**

Instructors

Ken Way,
Miller & Company

Walter Evans,
Consultant

Who Should Attend

Those whose job function include discussing customers' requirements and understanding what properties are needed for the materials that will be used in their production processes; developing best practice procedures that maintain and improve product quality; designing and processing castings; metallurgical process control and technology development; quality control of castings, including non-destructive evaluation; melting, pouring, processing, composition analysis, and mechanical testing; casting defect analysis and control.

Course Information: The course will begin at 8:30 a.m. on day 1 and end by 4:00 p.m. on day 2. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Nobake Molding & Coremaking 101 #09-16

September 15-16 / Schaumburg, IL / Member \$925 / Non-member \$1125

This course provides participants with a basic foundation of the nobake molding and coremaking process used within a foundry. Discussion will include basic terminology, common chemical binders used, the mold and coremaking process, equipment, and evaluating molds for defects. Participants will receive hands-on practice, walk through the decision-making process for evaluating casting deficiencies, and leave with a customized troubleshooting list for use back on the job. This course is a pre-requisite for advanced molding, testing and control courses.

Who Should Attend

The target audience for this course consists of individuals responsible for: making molds and cores using the nobake/air set molding process; supervising quality assurance.

Instructors

Tom Cobett,
T Cobett and Associates

John Roth,
Prairie Industrial Products LLC



Course Information: The course will begin at 8:00 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Introduction to Metalcasting #10-16

September 22-23 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

This course introduces the process of metalcasting. It provides a broad picture of what happens in a casting production facility, while illustrating the technology, variables and complexity involved in producing a casting. It covers casting design, alloy selection, process selection, design of the gating system, pouring and shakeout methods, cleaning and finishing methods, quality assurance, and key safety and environmental regulations.



Who Should Attend

The target audience for this course consists of individuals responsible for: foundry production, management, office and administration; buying from casting suppliers; designing/engineering cast components; production and/or sales of supplies and services to the industry.

Instructors

Leo Baran,
AFS and the Institute

Kevin Fleischmann,
AFS Institute

Scott Lammers,
AFS and the Institute

Al Spada,
AFS and the Institute

Course Information: The course will begin at 8:00 a.m. and end by 4:00 p.m. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Ergonomics: Optimizing Efficiency, Quality & Safety in Foundries #11-16

October 13 / Schaumburg, IL / Member: \$725 / Non-member: \$925

This course covers the use of ergonomic principles to recognize, evaluate, and control work-place conditions that cause or contribute to employee safety and productivity issues. Participants who attend this course will leave with the knowledge necessary to either initiate a new or improve an existing ergonomics program for controlling health and performance problems; to educate and convince management of the cost benefits of an ergonomically sound workplace; pro-actively identify potential risks and determine cost effective and sustainable job site modifications; and increase the effectiveness of existing lean and Six Sigma programs by integrating ergonomics to improve work processes which result in increased employee engagement, greater efficiency and better margins.

Instructor

Jill Kelby,
Kelby Ergo Design

Who Should Attend

The target audience for this course consists of individuals responsible for safety; human resources; and operations.



Course Information: The course will begin at 8:00 a.m. and end by 4:00 p.m. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Casting Design #12-16

October 14-15 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

This course addresses principles of effective metalcasting design by delving into the major factors that affect final part design. Participants will explore alloy selection, metalcasting process capabilities and limitations and their effects on casting design, and the impact of secondary operations. Other major topics will include design for manufacturability, fab to casting design conversions, dimensional control, and the importance of casting simulation. Discussion and case studies will be used throughout this two-day course to illustrate effective and practical casting design principles. Participants should have knowledge and experience in designing engineered components prior to attending this course.

Who Should Attend

The target audience for this course consists of individuals responsible for buying from casting suppliers; designing/engineering cast components; and quality assurance.

Instructors

Vadim Pikhovich,
Magma Foundry Technologies



Mark White,
Pratt & Whitney



Course Information: The course will begin at 8:15 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Casting Defect Analysis #13-16

October 20-21 / Lancaster, PA / Member: \$1025 / Non-member: \$1225

In order to determine the true root cause of a casting defect and select the proper corrective action, a systematic evaluation method must be applied. Implementing the wrong solution can cost the foundry in terms of runtime, cost, waste, safety, reduced return on investment or profit, sales and expertise. The intention of this course is for participants to become proficient in applying a ten-step procedure that will enable them to analyze and reduce metalcasting defects by correctly identifying defects and their root causes, and determining appropriate corrective actions. This course is applicable to sand molding processes (green, nobake, coldbox, shell).

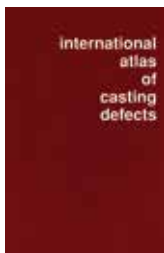
Instructors

Kevin Fleischmann,
AFS Institute

Scott Lammers,
AFS and the Institute

\$135 Value

**Two complimentary books
with course registration**



**Casting defects handbook
of your choice**



**Choose From Iron & Steel,
Copper-Base Alloys or
Aluminum Alloys**

Who Should Attend

The target audience for this course consists of individuals responsible for: managing and overseeing the production management staff; managing and supervising production staff; purchasing, sales, marketing or office operations; auditing/inspecting/quality control; engineering or design.



Course Information: The course will begin at 8:00 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Foundry Process Improvement #14-16

October 27-29 / Schaumburg, IL / Member: \$1100 / Non-member: \$1300

Foundries today often struggle with problem solving. This 2.5-day course provides participants with basic root cause analysis training. At its core, this course provides foundry personnel with disciplined problem solving techniques and emphasizes tools to better understand process data and performance using unique examples and case studies drawn from foundry settings. Some of the topics taught include: problem solving approaches, process thinking, problem characterization, collecting and analyzing data, tools for analyzing process variation, process capability, testing the root cause, developing solutions and countermeasures, and methods for sustaining improvement.

Who Should Attend

The target audience for this course consists of individuals responsible for: quality control; process improvement (technical/manufacturing); resolving acute and/or chronic quality or productivity issues; developing problem solving and/or process control plans and effective control strategies; effecting process improvement change within their own organization.

Instructors

Walter Evans,
Process Improvement Consultant

Ted Schorn,
Enkei America



Course Information: The course will begin at 8:00 a.m. on the first day and end by 12:00 p.m. on the third day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Casting Defect Analysis #15-16

November 3-4 / Neenah, WI / Member: \$1025 / Non-member: \$1225

In order to determine the true root cause of a casting defect and select the proper corrective action, a systematic evaluation method must be applied. Implementing the wrong solution can cost the foundry in terms of runtime, cost, waste, safety, reduced return on investment or profit, sales and expertise. The intention of this course is for participants to become proficient in applying a ten-step procedure for correctly identifying defects and their root causes, and determining appropriate corrective actions. This course is applicable to sand molding processes (green, nobake, coldbox, shell).

Instructors

Kevin Fleischmann

AFS Institute

Scott Lammers

AFS and the Institute

Who Should Attend

The target audience for this course consists of individuals responsible for: managing and overseeing the production management staff; managing and supervising production staff; purchasing, sales, marketing or office operations; auditing/inspecting/quality control; production or engineering or design.

\$135 Value

**Two complimentary books
with course registration**



**Casting defects handbook
of your choice**



**Choose From Iron & Steel,
Copper-Base Alloys or
Aluminum Alloys**



Course Information: The course will begin at 8:00 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Aluminum Crucible Furnace Practices #16-16

November 17 / Schaumburg, IL / Member: \$725 / Nonmember: \$925

This course covers basic furnace and crucible operations, including optimization, operations and maintenance practices for both electric and fuel-fired aluminum crucible furnaces. Participants of this course will leave with the knowledge or skills needed to select an appropriate aluminum crucible for their needs, operate and maintain aluminum crucible furnaces, store and handle crucibles to maintain the life of the crucible, avoid premature deterioration of the refractory, monitor and manage heating systems and burners, and optimize crucible furnace operations so usage at any stage is efficient.

**NEW
COURSE**



Who Should Attend

The target audience for this course consists of individuals responsible for or involved with aluminum crucible melting operations and/or aluminum crucible maintenance and handling in the foundry.

Instructor

David Neff,
Retired, Pyrotek

Course Information: The course will begin at 8:00 a.m. and end by 4:00 p.m. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Aluminum Metallurgy 201 #17-15

November 18-19 / Schaumburg, IL / Member: \$925 / Non-member: \$1125

The purpose of this course is to provide target audience participants with knowledge and skills regarding the nomenclature, terminology, principles, and techniques for the metallurgy of aluminum base casting alloys. This course makes clear the reasons why foundry personnel "do what they do" in relation to aluminum casting metallurgy. This course examines aluminum structure and properties, the effects of alloying elements and the influence of melting operations on impurities; how to interpret (read) phase diagrams and recognize characteristics from microstructures; how grain refinement and modification work in foundry operations; and much more.

Who Should Attend

The target audience for this course consists of individuals responsible for overseeing the efficiency and safety of processes and developing new processes to improve efficiency and/or decrease costs; researching, developing, processing and testing metals to improve capabilities and solve problems; developing best practice procedures that maintain and improve product quality.

Instructor

Salim Khan,
Consultant

Course Information: The course will begin at 8:30 a.m. on the first day and end by 3:30 p.m. on the second day. Detailed travel information, including available hotel room blocks, will be provided in a confirmation letter e-mailed within one business day of registration.

Two Valuable
Conferences at the
Same Location...



Attend Both
Conferences
and Save \$
Member: \$1,150 /
Nonmember: \$1,600

Stay for Both!

Environmental 101

August 9-10, 2015 / Marriott Park City, UT / Member: \$595 / Nonmember: \$795

Come to Park City, Utah for two days of sessions covering the basic environmental issues and concerns for the industry, including permitting and reporting, testing, pollution control and environmental management facing the metalcasting industry in the U.S.

Environmental, Health & Safety Conference

August 11-13, 2015 / Marriott Park City, UT / Member: \$650 / Nonmember: \$875

This annual conference covers hotbed EHS topics and provides ways to improve the health and safety of your workers. Annual service awards from the AFS Environmental Health and Safety Division (Div. 10) also will be presented at the event.

Foundry Executive Conference

Sept. 27-29, 2015 / Hilton Head Island, SC

Member: \$1,400 • Spouse: \$700 / Nonmember • Spouse: Contact customer service.

Mark your calendar now for the metalcasting industry's premier meeting for executives and management. Hear from highly regarded speakers who will bring fresh ideas and perspectives to business planning and strategy in today's economic environment.

Design and Production of High Quality Aluminum Castings

Oct. 5-7, 2015 / Nashville, TN / Member: \$695 / Nonmember: \$845

Top experts are gathering in the Music City to present the right notes required to produce structural castings for critical applications. Topics include: design principles for aluminum components; melt treatment and cleanliness; gating, feeding and simulation; process optimization; heat treating; inspection and quality assurance; current and future research in light metals casting.

International Ferrous Melting Conference

Oct. 7-8, 2015 / Nashville, TN / Member: \$795 / Nonmember: \$945

Metalcasters will take center stage in Music City, gathering the industry's top experts to find the best processes of production for treating and melting alloys. You will learn about: Alloy and Treatment Process Optimization for quality ductile iron production; controlling slag inclusion; opportunities for heat recovery in the cupola furnace plant; effective slag control in a coreless furnace; refractory and repair relines of channel furnaces and slag sampling and testing.

Casting Process Optimization

Member: \$450 / Non-member: \$550

This self-paced course gives you the tools and techniques essential to understand the various sub-processes in your casting facilities. Participants will be given generic process maps and FPR (Factor-Process-Response) diagrams for various sub-processes in the foundries and then are required to create FPR (Factor-Process-Response) diagrams specific to the sub-processes in their respective foundries. Software used during the course is included in the registration fee.

Six Sigma Green Belt Certification

Member: \$1295 / Non-member: \$1445

This course gives you the tools and techniques essential to be an effective member of the Six Sigma Green Belt Team. This course focuses on effective data collection and covers the Define, Measure, Analyze, Improve and Control (DMAIC) phases of Six Sigma methodology, with special reference to metalcasting processes. Participants in this course will learn how to provide data collection support to Black Belts and also how to fulfill the project leader's role on small Green Belt metalcasting projects.



Aluminum 101: An Introduction to Aluminum & Aluminum Casting Processes

Member: \$625 / Non-member \$775

This is an introductory course covering the characteristics and properties of aluminum, alloying elements and their general applications as well as considerations for working with aluminum shape-cast parts. This course also covers melting technology and foundry casting technology and looks at the decision making process behind specific technologies used. This online course engages the learner through interactive activities, videos, knowledge checks and case studies.

Metalcasting 101: An Introduction to Metalcasting

Member: \$725 / Non-member \$875

This introductory course introduces the process of metalcasting. It provides a broad picture of what happens in a casting production facility, while illustrating the technology, variables and complexity involved in producing a casting. It covers casting design, alloy selection, process selection, gating system design, pouring and shakeout methods, cleaning and finishing methods, quality assurance, and key safety and environmental regulations. This online course engages the learner through interactive activities, videos, knowledge checks and case studies.



Casting Processes: An Introduction

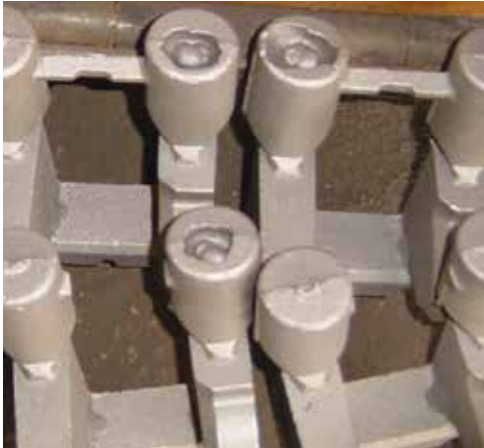
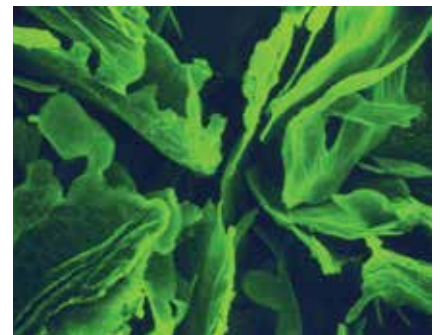
Member: \$100 / Non-member: \$150

This mini course will introduce you to the various metalcasting processes, including their advantages and disadvantages, as well as rapid prototyping technologies available.

Metalcasting Alloys: An Introduction

Member: \$100 / Non-member: \$150

This mini course will introduce you to the various alloys used for metalcasting, including applications.



Defects Related to Gating & Riser Design

Member: \$50 / Non-member: \$100

Learn about types of green sand casting defects that result from design issues in the gating system. Learn the functions of the gating system, basic design principles, and detailed information about various defects that result from poor gating design and how to correct them. Defects discussed include those that result from poor metal fluidity and improper layout, such as shrinkage and inclusions.

Basic Metallurgy of Ductile Iron

Member: \$50 / Non-member: \$100

Great for new employees or anyone wanting a basic introduction to ductile iron metallurgy, this course covers the following topics: the members of the cast iron family; comparisons of the cast iron family; the specifications of the cast iron family; the chemistry of the cast iron family; inoculants used to create ductile iron; production problems; changes in properties when production problems occur; the microstructure of ductile iron; the alloy content of ductile iron; treatment methods; physical limitations; nodulizing problems; process control.

Registration Form

Cast Metals Institute

1695 N. Penny Lane, Schaumburg, IL 60173-4555



All fees payable in U.S. dollars or equivalent.

Remit payment to: 35169 Eagle Way, Chicago, IL 60678-1351

☐ Check Enclosed

For Credit Cards:

To register toll free, call 800-537-4237 or 847-824-0181. FAX: 847-824-2174

The following information is required in order to charge

☐ American Express ☐ MasterCard ☐ VISA

Account Number _____ Exp. Date _____

Authorized Signature _____

Qty.	Reg #	Title	Price
Total			

Name _____ Title _____

Name _____ Title _____

Name _____ Title _____

Name _____ Title _____

Company _____

Address _____

City/State/Zip _____

Telephone _____ FAX/Email _____

Tax Deduction of Expenses An income tax deduction is allowed for expenses of education (including registration fee, travel, meals and lodging) undertaken to maintain and improve professional skills. (See U.S. Treas. Regulation 1.162.5.)

Cancellations and Substitutions Substitute students will be accepted anytime. However, cancellations of confirmed registrants with full refund of course fees cannot be accepted unless received 15 days prior to course date. *In the unlikely event a course is cancelled for any reason, the Institute liability is limited to the return of the registration fee.*