

2016 Education Calendar

May

May 3 / Kalamazoo, MI

Aluminum 101

May 4-5 / Kalamazoo, MI

Aluminum Melting 201

May 10-11 / Cedar Falls, IA

Nobake Molding & Coremaking 201

May 12 / Cedar Falls, IA

Chemically Bonded Sand Testing

May 17-19 / Pittsburg, KS

Hands-On Introduction to Metalcasting

June

June 7 / Schaumburg, IL

Copper 101

June 8-9 / Schaumburg, IL

Copper Metallurgy 201

June 14-15 / Schaumburg, IL

Casting Defect Analysis

June 16 / Schaumburg, IL

Green Sand 101

June 21-22 / Schaumburg, IL

Gating & Riser Design 101

June 23 / Schaumburg, IL

Steel 101

July

July 19 / Schaumburg, IL

Iron 101

July 20-21 / Schaumburg, IL

Iron Metallurgy 201

August

August 2-3 / Schaumburg, IL

Intro to Metalcasting

August 16-17 / Schaumburg, IL

Casting Cost Estimating

August 16-17 / Galesburg, IL

Casting Supplier Auditing

August 18-19 / Schaumburg, IL

Coldbox Process 201

August 23-24 / Schaumburg, IL

Steel Melting 201

August 30-31 / Decatur, IN

Design & Optimization for 3D Sand Printing

Coming Soon: Just in Time Education Courses/E-Learning

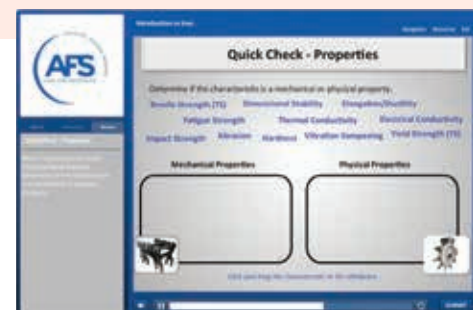
The AFS Institute developed 20 e-learning modules ranging from 15 minutes to 1 hour+ in length. These modules are viewable on any device or browser in our new Learning Management System (LMS).

Our e-learning modules focus on practical application you can use in your job immediately. Each module is based on adult education best practices and strives to engage you throughout the learning.

The e-learning modules consist of the following topics:

- 6 green sand molding modules
- 7 cast iron modules
- 6 casting defect analysis modules
- 1 Introduction to Metalcasting course

Stay tuned for more e-learning modules coming in 2016!



Classroom Courses

Aluminum 101: An Introduction to Aluminum & Aluminum Casting Processes #27-16

May 3 / Kalamazoo, MI / Member \$800 / Non-member \$1000

Skills You Will Learn:

Held at Western Michigan University, this course covers the characteristics and properties of aluminum, alloying elements and their general applications and considerations for working with aluminum cast parts. Participants will learn about melting and casting technology and the decision-making process behind specific technologies.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: management, production engineers, production personnel new to working with aluminum, technical sales staff, purchasing staff, and design engineers.

Instructor

Dave Neff, *Retired-Pyrotek*

Beginner-Level



Recommended Follow Up Courses:

Aluminum Melting 201

Aluminum Crucible
Furnace Practices

Recommended Publications:

*Best Practices in Aluminum
Metalcasting*

*Aluminum Castings Technology,
3rd Edition (Spring 2016)*

Mid-Level



Recommended Follow Up Courses:

Aluminum Metallurgy 201

Aluminum Crucible
Furnace Practices

Recommended Publications:

*Best Practices in Aluminum
Metalcasting*

Aluminum Melting 201 #28-16

May 4-5 / Kalamazoo, MI / Member \$1075 / Non-member \$1275

Skills You Will Learn:

This two-day laboratory course, held at Western Michigan University, introduces the basic principles and practices of aluminum melting in casting. The course will examine furnace charging, furnace temperature's effect on the melt, and in-furnace treatments to reduce impurities. Melt sampling, transfer and pouring methods and the corresponding equipment will be analyzed, with laboratory demonstration and practice of various techniques throughout the course.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: melting and pouring personnel and individuals with little experience in aluminum melting practices.

Instructor

Dave Neff, *Retired-Pyrotek*

Mid-Level



Recommended Follow Up Courses:

Chemically Bonded Sand Testing
Casting Defect Analysis

Recommended Publications:

Mold & Core Test Handbook, 4th Edition
Coatings-Related Casting Defects Wall Chart

Nobake Molding & Coremaking 201 #29-16

May 10-11 / Cedar Falls, IA / Member \$1075 / Non-member \$1275

Skills You Will Learn:

This two-day laboratory course held at the University of Northern Iowa is the second in the nobake series, providing participants with the next level of knowledge on the topic through discussion and hands-on laboratory activities. The course will cover specialty sands, sand variables and sand additives, types of chemical binders, how to determine the correct sand and binder for the application, the use of refractory coatings, adhesives, and release agents, how to evaluate problem areas with raw materials, binders and equipment, and how to make adjustments to ensure a quality mold.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of individuals responsible for: making molds and cores using nobake/air set molding process, recognizing complex sand casting defects, monitoring/supervising employees responsible for making nobake molds and cores, modifying molding and coremaking processes to correct casting deficiencies, and quality assurance.

Instructor

Tom Cobett, *T. Cobett & Associates*

Chemically Bonded Sand Testing #30-16

May 12 / Cedar Falls, IA / Member \$925 / Non-member \$1125

Skills You Will Learn:

This one-day laboratory course held at the campus of University of Northern Iowa provides detailed instruction on when and how to correctly perform widely used chemically bonded sand tests, including proper sand sampling methods, from the *Mold & Core Test Handbook*. The student will be able to identify typical operating ranges for test values.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

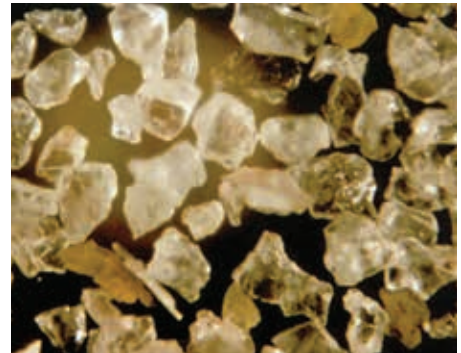
Who Should Attend

The target audience for this course consists of individuals responsible for: performing sand lab tests, managing sand labs, and troubleshooting chemically bonded mold and core defects.

Instructor

Tom Cobett, *T. Cobett & Associates*

Beginner-Level



Recommended Follow Up Courses:

Nobake Molding & Coremaking 201

Recommended Publications:

Principles of Metalcasting, 3rd Edition

Classroom Courses

Beginner-Level



Hands-On Introduction to Metalcasting #31-16

May 17-19 / Pittsburg, KS

Member \$1300 / Non-member \$1500

Skills You Will Learn:

This three-day laboratory course held at Pittsburg State University 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. Students will participate in lab demonstrations and the making of several castings.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

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

Instructor

Kevin Fleischmann, *AFS Institute*

Recommended Follow Up Courses:

“Mold & Coremaking” 101 Courses

“Alloy” 101 Courses

Recommended Publications:

Principles of Metalcasting, 3rd Edition

Metalcasting Principles & Techniques

Beginner-Level

Copper 101 #32-16

June 7 / Schaumburg, IL

Member \$725 / Non-member \$925

This course covers the characteristics and properties of copper, alloying elements and their general applications, and considerations for working with copper cast parts. It 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 of cast copper for those entering into or establishing relationships with others in the 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.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: management, production engineers, production personnel new to working with copper, technical sales staff, purchasing staff, and design engineers.

Instructor

Kumar Sadayappan,
Canmet MATERIALS



Recommended Follow Up Courses:

Copper Melting 201

Copper Metallurgy 201

Recommended Publications:

Casting Defects Handbook:

Copper & Copper Based Alloys

Casting Copper Based Alloys, 3rd Edition (Spring 2016)



Mid-Level



Copper Metallurgy 201 #33-16

June 8-9 / Schaumburg, IL

Member \$925 / Non-member \$1125

Knowledge of the physical metallurgy of copper alloys is necessary for casting metallurgists to effectively operate. This knowledge includes melt treatment, effects of alloy additions on physical and mechanical properties, solidification, heat treatment and final properties. The correlations between the processing technology, defects and properties, as well as environmental issues are important features for the metallurgist to understand. Copper Metallurgy 201 will address these topics to improve the metallurgical skills of casting personnel.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: design and manufacturing engineers, process engineers, plant metallurgists, technical directors/plant managers, processing technicians, quality control personnel, melting and casting supervisors, melters, molders, heat treatment technicians, professors from technical colleges and universities, and high school science teachers.

Instructor

Kumar Sadayappan,
Canmet MATERIALS



Recommended Follow Up Courses:

Casting Design
Gating & Riser Design 101

Recommended Publications:

Casting Copper Based Alloys, 3rd Edition (Spring 2016)
Microstructure Development During Metalcasting

Mid-Level

Casting Defect Analysis #34-16

June 14-15 / Schaumburg, IL

Member \$925 / Non-member \$1125

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 metalcasting facility in terms of runtime, cost, waste, safety, reduced return on investment or profit, sales and expertise. Participants will become proficient in applying a ten-step procedure to analyze and reduce metalcasting defects by correctly identifying them and their root causes and determining appropriate corrective actions. This course is most applicable to sand molding processes (green, nobake, coldbox, shell).

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

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

Instructors

Kevin Fleischmann, *AFS Institute*
Scott Lammers, *AFS Institute*

Two complimentary books with course registration

\$135 Value  +  **Casting defects handbook**
Choose From Iron & Steel, Copper-Base or Aluminum Alloys

Recommended Follow Up Courses:

Foundry Process Improvement

Recommended Publications:

International Atlas of Casting Defects
Coating-Related Casting Defects Wall Chart



Classroom Courses

Green Sand 101 #35-16

June 16 / Schaumburg, IL / Member \$725 / Non-member \$925

Skills You Will Learn:

This course is an introduction to the green sand molding process used within a metalcasting facility. Discussion will include terminology, types of sands used, the mold making process, using and maintaining equipment, and considerations for preventing casting defects. Participants will leave the course with a basic foundation of the green sand molding process and techniques used in established facilities.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: green sand molders, metalcasting supervisors or lead persons, sand lab technicians, maintenance personnel, and new employees or anyone new to the green sand molding process.

Instructor

Sairam Ravi, *University of Northern Iowa*

Beginner-Level



Recommended Follow Up Courses:

Green Sand Testing
Green Sand Molding 201

Recommended Publications:

Principles of Sand Control

Beginner-Level



Recommended Follow Up Courses:

"Alloy" Metallurgy 201
Casting Design

Recommended Publications:

Basic Principles of Gating & Riser Design, 2nd Edition
Microstructure Development During Metalcasting

Gating & Riser Design 101 #36-16

June 21-22 / Schaumburg, IL / Member \$925 / Non-member \$1125

Skills You Will Learn:

Casting quality and yield are directly impacted by gating design. This course guides participants through the basic functions of gating and risers to provide clean, sound and functional castings. An introduction to fluid flow and solidification will serve to guide participants through key design concepts of various function elements of a good gating and riser design. Emphasis will be placed on hands-on activities, animations, and simulations to enhance understanding of the filling and solidification processes in a metalcasting facility. Focus will be on practical examples in iron, steel, aluminum and copper castings. The goal will be to introduce the participants to the basics of gating and riser design, common industry norms and troubleshooting.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of individuals responsible for: developing tooling for castings produced with gravity pouring processes, improving casting quality issues related to the tooling, improving yield and production costs related to tooling design.

Instructors

Dr. Sudesh Kannan, *Consultant*
Shelly Dutler, *AFS Institute*

Beginner-Level



Recommended Follow Up Courses:

Nobake Mold & Coremaking 101
Steel Melting 201

Recommended Publications:

Steel Castings Handbook (ASM)
Casting Defects Handbook: Iron & Steel

Steel 101 #37-16

June 23 / Schaumburg, IL / Member \$725 / Non-member \$925

Skills You Will Learn:

This course introduces the characteristics and properties, alloying elements and grades of steel, heat treatment, quality control, and considerations for working with steel cast parts. This course also covers melting and casting technology.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: management-all levels, production engineers, quality assurance, process control, technical sales staff, purchasing staff, and design engineers.

Instructors



Jerrod Miller, *Spokane Industries*
Shelly Dutler, *AFS Institute*

Iron 101 #01-17

July 19 / Schaumburg, IL / Member \$725 / Non-member \$925

Skills You Will Learn:

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.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of individuals responsible for: 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.

Instructor

Scott Lammers, *AFS Institute*

Beginner-Level



Recommended Follow Up Courses:

Iron Melting 201

Recommended Publications:

Introduction to Gray Iron Cast Iron Processing

Classroom Courses

Mid-Level



Iron Metallurgy 201 #02-17

July 20-21 / Schaumburg, IL

Member \$925 / Non-member \$1125

Skills You Will Learn:

The purpose of this course is to provide target audience 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.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: process engineers, process technicians, metallurgists, metalcasting facility workers, quality control personnel, melting and casting supervisors, and melters.

Instructors

Ken Way, *Miller & Company*

Walter Evans, *Consultant*

Recommended Follow Up Courses:

Gating & Riser Design 101

Casting Design

Recommended Publications:

Iron Castings Engineering Handbook

Ductile Iron Handbook

Beginner-Level

Introduction to Metalcasting #03-17

August 2-3 / Schaumburg, IL

Member \$925 / Non-member \$1125

Skills You Will Learn:

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.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

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

Instructors

Kevin Fleischmann, *AFS Institute*

Leo Baran, *AFS Institute*

Scott Lammers, *AFS Institute*

Al Spada, *AFS Institute*

Steve Robison, *AFS Institute*

Recommended Follow Up Courses:

"Alloy 101" Courses

"Mold & Coremaking" 101 Courses

Recommended Publications:

AFS Metalcasting Principles & Techniques



Mid-Level



Casting Cost Estimating #04-17

August 16-17 / Schaumburg, IL
Member \$925 / Non-member \$1125

Skills You Will Learn:

Cost estimating is a critical factor in ensuring a manufacturing company continues to acquire customers and be profitable. This course examines the various cost components and methods used to arrive at an accurate estimate of the casting production costs. It also provides information on common traps in casting estimates and measures that can be used to avoid them.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

The target audience for this course consists of: administration/management, casting buyers/designers, cost estimators, finance/accounting, industrial engineers, procurement, and sales/marketing personnel.

Instructors

Ron Thomas, *B & L Information Systems Inc.*

Recommended Follow Up Courses:

Foundry Process Improvement
Casting Design

Register to Attend Institute Classes at www.afsinc.org/institute.

Unless noted, most single day classes begin at 8 a.m. and end by 4 p.m. Two-day classes 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 hotel room blocks, will be provided in a confirmation email after registration.

Mid-Level

Casting Supplier Auditing #05-17

August 16-17 / Galesburg, IL
Member \$1025 / Non-member \$1225

Skills You Will Learn:

This course will review the methods for effectively performing supply chain audits of metalcasting facilities. Topics covered will include an overview of the audit process; determining audit requirements; developing and preparing to perform an audit; and closing the audit loop. Held at a casting supplier, Galesburg Castings, participants will spend the better part of the second class day auditing several different areas of the foundry as part of this interactive and hands-on course.

View the course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

This course is only open to employees from companies who design and/or purchase metalcastings, and class size is limited to 20 participants.

Who Should Attend

The target audience for this course consists of individuals responsible for: purchasing from foundries, maintaining quality control, and supplier development.

Instructors

Nick Fox, *Galesburg Castings*
Walter Evans, *Consultant*



Recommended Follow Up Courses:

Casting Defect Analysis

Recommended Publications:

Casting Source Directory



Classroom Courses

Coldbox Process 201#06-17

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

Skills You Will Learn:

This course is the second course in the coldbox coremaking series and provides the next level of knowledge in relation to the molding processed using within a foundry to make coldbox cores. Discussion will include coldbox terminology and a review of the coldbox process for coremaking, common sands, additives and coatings used, coldbox binders and in particular PUCB, a look at core box equipment, core box tooling and best usage parameters, and considerations when troubleshooting and optimizing the process for proper quality assurance.

Who Should Attend

The target audience consists of people in the following positions:

- Coldbox coremakers
- Foundry foreman or lead persons
- Sand lab technicians
- Maintenance personnel
- Tooling engineers
- Tooling supervisors
- Core room supervisors
- Process engineers
- Technical managers
- Technical service engineers
- Quality engineers
- Quality supervisors
- Materials engineers

Instructor

Doug DeSmit, ASK Chemicals



Mid-Level



Recommended Follow Up Courses:

Casting Defect Analysis

Recommended Publications:

Mold & Core Test Handbook

Mid-Level



Steel Melting 201 #07-17

August 23-24 / Schaumburg, IL / Member \$925 / Non-member \$1125

Skills You Will Learn:

Steel Melting 201 will cover the operations of steel melting furnaces including electric arc and induction; the process steps of charging and startup, melt down, chemistry slag control, alloying, tapping, and process documentation; post melt processing methods AOD and VOD; melt quality control of undesirable elements with sampling and chemistry measurements; ladle selection and considerations; and maintenance and safety procedures.

Who Should Attend

The target audience consists of people in the following positions:

- Melting operators/supervisors
- Metalcasting facility production and management
- Process control
- Quality assurance
- Production and/or sales of supplies and services to the industry
- Environmental engineers
- Equipment designers
- New employees or anyone new to steel melting

Instructor

Ken Sandell, Consultant

Recommended Follow Up Courses:

Casting Defect Analysis

Recommended Publications:

Basic Concepts of Ferrous Metallurgy

Advanced-Level



Recommended Follow Up Courses:

Casting Design

Recommended Publications:

Rapid Tooling Guidelines for Sand Casting

Design & Optimization for 3D Sand Printing #08-17

August 3--31 / Decatur, IN / Member \$1200 / Non-member \$1400

Skills You Will Learn:

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 Hoosier Pattern in Decatur, IN.

View the detailed course syllabus, including lesson plan, through the Education Calendar at www.afsinc.org/institute.

Who Should Attend

Design engineers, tooling engineers, and foundry engineers.

Instructor

Steve Murray, *Hoosier Pattern*

Brandon Lamoncha, *Humtown Products*

Jiten Shah, *Product Development & Analysis LLC*

Jerry Thiel, *University of Northern Iowa*



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Contact Kevin Fleischmann, kevinf@afsinc.org.





Cast Metals Institute
 1695 N. Penny Lane
 Schaumburg, IL 60173-4555
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2016 Upcoming Conferences

August

August 7-8 / Milwaukee, WI

Advanced Waste Seminar

August 9-10 / Milwaukee, WI

Environmental Health & Safety Conference

September

September 11-13 / Park City, UT

Foundry Executive Conference

October

October 3-6 / Detroit, MI

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Highlights Include:
 Aluminum 101 & 201
 Chemically Bonded Sand Testing
 Casting Defect & Analysis
 Casting Cost Estimating
 Design & Optimization for
 3D Sand Printing

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AFS Institute

Hands-On Interactive Metalcasting Courses For You!