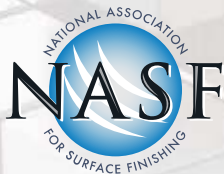


2023 COURSE OPTIONS



NASF.org

4 Convenient Learning Platforms

- ▶ web-based
- ▶ classroom
- ▶ home study
- ▶ custom



KNOW MORE

Whether you're new to the finishing field or consider yourself a veteran, there are learning opportunities that will increase and deepen your knowledge of this complex and evolving industry.

NASF, and its education arm the AESF Foundation, offer thoughtfully developed technical courses that explore and explain the important "basics" of metal finishing as well as the latest and most impactful developments in every specialty within the field.

Know – and grow – with help from NASF/AESF Foundation

Let us help you with the work you do now – and succeed with the new opportunities in your future.

The National Association for Surface Finishing

Email: info@nasf.org

Website: nasf.org/education

Phone: +1 202.591.2454





BECOME CERTIFIED

Certified Electroplater Finisher (CEF), Certified Aerospace Finisher (CAF) and Master Surface Finisher (MSF) designations are the gold standards for finishing industry education worldwide. Certification demonstrates that the holder has the knowledge, skills and aptitude to excel on a comprehensive exam and to understand and work with the challenges of surface finishing.

When students achieve certification, they expand their knowledge, grow within the field and evolve as true professionals. They also become members of a select group that is recognized and rewarded by employers and peers.

Certification validates a student's mastery of information and ability to meet the challenges of complex finishing environments. Each individual who achieves certification not only expands their knowledge and professional value, but raises the bar within the industry overall, making finishing more predictable and of higher quality.

Find info and schedules
at **nasf.org/education**



Table of Contents

5 Introduction

7 AESF Foundation Certifications

9 Aluminum Finishing

11 Corrosion & Salt Spray

13 Electroless Deposition

15 Environmental Stewardship:
Pollution Prevention

17 Industrial & Precious Metals Plating

19 Zinc & Zinc Alloy Plating

21 Course Calendar & Tuition

6 About Foundation Courses

8 Airline & Aerospace Finishing

10 Chromium Plating for Engineering
Applications (Hard Chrome)

12 Electroforming

14 Electroplating & Surface Finishing

16 Environmental Stewardship:
Wastewater Treatment

18 Plating Essentials

20 Course Calendar & Tuition

22 Custom Course Options

Introduction

The National Association for Surface Finishing - NASF - represents the interests of businesses and professionals throughout the surface coatings industry.

NASF's highly regarded programs and activities reflect its mission to:

- Advance an environmentally and economically sustainable future for the finishing industry.
- Promote the vital role of surface technology in the global manufacturing value chain.

NASF provides a vital and active link to companies, professionals and technical experts through its events, programs, committees and communications. It serves every specialty – and every job title – within the surface finishing universe.

Membership is open to job shop and “captive” applicators, industrial users, suppliers of chemicals, equipment and services, technologists, researchers and academics.

Headquartered in Washington DC, the association conducts a robust advocacy and legislative education effort on behalf of the North American surface technology community.

AESF Education Foundation is a non-profit organization that functions as NASF's training arm. The Foundation's three core areas are education, research and scholarship. AESF Foundation was formed in 2006 and offers several distinct learning platforms: Classroom, Web-based Training, Home Study and Custom Courses, which are tailored to the individual needs of public and private entities.

AESF is the gold standard in finishing industry education and the exclusive grantor of industry certifications, from basic CEF (Certified Electroplater Finisher) to MSF (Master Surface Finisher).

About Foundation Courses

The National Association for Surface Finishing (NASF/AESF Foundation) offers technical education to advance the science and technology of surface finishing.



Web-Based Courses:

- Foundation courses in a series of web-based sessions
- Live, online interaction with NASF/AESF Foundation instructors and other industry experts
- Sessions take place on pre-determined Tuesdays & Wednesdays between Noon and 2:00 PM ET
- Session recordings are available to students for 30 days after the original posting date

WEB-BASED



Home Study Courses:

- Begin a Home Study anytime and at your own pace
- Hard copy materials include lessons and homework
- Technical Education Director responds to questions about material, grades, homework and offers suggestions to improve work
- Proctored exams at your location are also available

HOME STUDY



Classroom Courses:

- Live interaction with instructor in a classroom setting
- Instruction takes place over 2-4 days (add 1 day for optional exam)
- Taught in select locations throughout the U.S.

CLASS ROOM



Custom Courses:

- Design your course to meet your company's needs
- Mix and match 110 available course modules
- No travel required; we come to you
- Host a course at a time of your choosing

Registration is easy – and all online!
Go to nasf.org/education/

Help with registration or want more info?
Contact NASF/AESF Foundation
+1 202.591.2454 | info@nasf.org

AESF Foundation Certifications

Certified Aerospace Finisher (CAF) demonstrates specialized knowledge in materials, plating processes and quality control methods that are vital to airline manufacturing.

Certified Electroplater Finisher (CEF) demonstrates a broad knowledge of surface finishing that can be applied toward positions or business with manufacturers in a variety of industries.

Master Surface Finisher (MSF) demonstrates mastery of essential finishing processes, as well as knowledge in specialized processes and environmental stewardship.

To obtain the MSF designation, the student must pass exams for the following:

Primary (Choose 1)

- Airline & Aerospace Finishing (CAF)
- Electroplating & Surface Finishing (CEF)

Core (Choose 3)

- Aluminum Finishing
- Chromium Plating for Engineering Purposes
- Electroforming
- Electroless Deposition
- Precious Metals Finishing
- Zinc & Zinc Alloy Plating

Secondary (Choose 2)

- Corrosion & Salt Spray
- Environmental Stewardship: Pollution Prevention
- Environmental Stewardship: Wastewater Treatment

Airline & Aerospace Finishing



The course consists of 21 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for employees and supervisors working for Airline/Aerospace OEMs, aircraft rework facilities, Naval, Army, Marine and Air Force rework facilities and suppliers to the airline/aerospace industry.

Goal

The goal of this course is to provide the student with a broad range of information related to metal finishing operations that are common in the Airline/Aerospace industry.

Course Lessons

1. Electroplating Basics
2. Corrosion of Metals
3. Hydrogen Embrittlement
4. Metals & Alloys Used in Aerospace
5. Chemical Surface Preparation of Substrates for Plating
6. Mechanical Surface Preparation
7. Masking Techniques
8. Quality Conformance Testing
9. Plating Solution Maintenance
10. Chem Film
11. Zinc & Manganese Phosphating
12. LHE Zinc-Nickel Alloy Plating
13. Cadmium Ti-Cad & Nickel-Cad Diffused Coatings
14. Copper & Silver Plating
15. Sulfamate & Nickel Strike Plating
16. Hard Chromium Plating
17. Anodizing Aluminum
18. Electroless Nickel Deposition
19. Brush Plating
20. Stripping
21. Thermal Spray & PVD



Aluminum Finishing



The course consists of 11 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for employees and supervisors who work in captives or job shops that apply anodizing and other finishing processes to aluminum.

Goal

The goal of this course is to provide the student with a broad range of information related to metal finishing processes that are used on aluminum.

Course Lessons

1. The Metallurgy of Aluminum
2. Mechanical Finishing of Aluminum
3. Preparing Aluminum for Anodizing & Plating
4. Aluminum Bright Dips & Electropolishing
5. Etching & Chemical Milling of Aluminum
6. Equipment Requirements for Anodizing
7. Sulfuric Acid Anodizing of Aluminum
8. Coloring & Sealing of Anodized Aluminum
9. Hardcoat & Alternate Anodizing Solutions
10. Anodizing Aluminum in Chromic Acid & Alternate Solutions
11. Conversion Coating on Aluminum



Chromium Plating for Engineering Applications (Hard Chrome)

The course consists of 10 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators and supervisors of job shops and captive shops performing hard chromium plating operations on a variety of substrates. The course can also benefit sales personnel who work for suppliers of hard chromium and equipment.

Goal

The goal of this course series is to provide the student with a basic understanding of chemical and electrical principles as they relate to hard chromium plating.

Course Lessons

1. Chemistry for Hard Chromium Platers
2. Electricity for Hard Chromium Platers
3. Electrochemistry for Hard Chromium Platers
4. Equipment for Hard Chromium Plating
5. Masking Techniques
6. Mechanical Surface Preparation
7. Chemical Surface Preparation
8. Basic Chromium Plating Principles
9. Analysis & Control of Chromium Plating Solutions
10. Troubleshooting & Purification of Chromium Plating Solutions



Corrosion & Salt Spray

The course consists of 7 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators of accelerated corrosion tests and supervisors of metal finishing shops and captive shops that have in-house corrosion testing capability or that outsource testing to outside laboratories. The course is also beneficial to sales personnel serving the metal finishing industry, as it covers valuable information about the corrosion resistance of various coatings.

Goal

The goal of this course is to provide the student with a general knowledge of common corrosion mechanisms, how they are employed in accelerated corrosion tests and best operating practices for conducting accelerated corrosion testing.

Course Lessons

1. Corrosion Principles, Tests & Design for Corrosion Protection Part 1
2. Corrosion Principles, Tests & Design for Corrosion Protection Part 2
3. Equipment for Salt Spray Testing
4. Salt Spray Cabinet Maintenance & Operation
5. Preparing, Exposing & Evaluating Parts
6. Alternate Accelerated Corrosion Tests
7. Salt Spray Failures



Electroforming

The course consists of 8 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for employees and supervisors working in both captive and job shops performing electroforming using nickel or copper. Trainees should have at minimum a high school diploma. Some experience in processing parts for surface finishing is helpful, but not required. Line operators, managers, technical sales representatives and anyone working in the electroforming industry will benefit from attending this course.

Goal

The goal of this course is to provide the student with a broad range of information related to electroforming operations that are commonly conducted on a variety of mandrels.

Course Lessons

1. Introduction to Electroforming
2. Electrochemistry for Electroforming
3. Sulfamate Nickel Plating Part 1
4. Sulfamate Nickel Plating Part 2
5. Mandrels: Types, Materials, Design & Preparation
6. Copper & Gold Electroforming
7. Electroforming Applications Part 1
8. Electroforming Applications Part 2



Electroless Deposition

The course consists of 11 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for employees and supervisors working in both captives and job shops performing electroless nickel plating. Line operators, managers, technical sales representatives and engineers who work in job shop or captive shop electroplating or in the airline/aerospace industry will benefit from this training program.

Goal

The goal of this course is to provide the student with a broad range of information related to electroless nickel plating on a variety of substrates.

Course Lessons

1. Overview of Electroless Nickel Plating
2. Properties of Electroless Nickel Deposits
3. Equipment for Electroless Nickel Plating
4. Pre- & Post-Plate Processing in Electroless Nickel Plating Part 1
5. Pre- & Post-Plate Processing in Electroless Nickel Plating Part 2
6. Electroless Nickel Plating Solutions
7. EN Operating Variables
8. Quality Control for EN
9. Electroless Deposition on Plastics
10. Electroless Deposition of Gold & Cobalt



Electroplating & Surface Finishing

The course consists of 21 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators and supervisors of job shops and captive shops applying a broad range of surface finishes on a variety of substrates. The course is also beneficial to sales personnel serving the metal finishing industry.

Goal

The goal of this course is to present a broad range of information related to the fundamentals of electroplating and methods of preparing parts for various surface finishing processes.

Course Lessons – Part 1

1. Chemistry
2. Electricity
3. Electrochemistry
4. Metallic Corrosion
5. Part Fabrication
6. Barrel, Rack & Other Plating Methods
7. Hull Cell & Other Test Cells
8. Rinsing
9. Filtration & Purification of Surface Finishing Solutions
10. Preparing Metals for Plating
11. Testing of Plated Deposits

Course Lessons – Part 2

12. Zinc Plating
13. Chromates, Phosphates & Black Oxide
14. Copper Plating
15. Nickel Plating
16. Chromium Plating
17. Precious Metals Part 1: Silver, Palladium, Ruthenium
18. Precious Metals Part 2: Gold, Platinum, Rhodium
19. Alloy Plating
20. Electroless Nickel Plating
21. Anodizing



Environmental Stewardship: Pollution Prevention

The course consists of 10 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators and supervisors of contract and captive and shops performing metal finishing operations such as electroplating and anodizing. The course can also benefit sales personnel who work for manufacturers or service companies in the pollution control industry.

Goal

The goal of this course is to provide the student with a broad range of information related to methods of preventing pollution by employing good operating practices, recycling or substitution.

Course Lessons

1. Best Operating Practices
2. Pollution Prevention for Acids & Cleaners
3. Pollution Prevention & Ion Exchange
4. Electrolytic Recovery Systems
5. Evaporative Recovery Systems
6. Reverse Osmosis & Other Membrane-Based Recovery Systems
7. Pollution Prevention in Plating Processes
8. Pollution Prevention in Aluminum Finishing
9. Pollution Prevention for Stripping Operations
10. Alternatives to Electroplating



Environmental Stewardship: Wastewater Treatment

The course consists of 10 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program was developed for operators and supervisors of wastewater pretreatment systems at contract and captive shops performing metal finishing operations such as electroplating and anodizing. The course can also benefit sales personnel who work for suppliers to the wastewater treatment industry.

Goal

The goal of this course is to provide the student with a broad range of information related to removing, neutralizing and/or destroying pollutants found in metal finishing wastewater.

Course Lessons

1. Chemistry of Water Part 1
2. Chemistry of Water Part 2
3. Water Quality
4. Introduction to Wastewater Treatment
5. Process Instrumentation
6. REDOX Treatments
7. Alternate Treatments
8. Suspended Solids Separation
9. Carbon Treatment of Wastewater
10. Treatments for Oily Wastewater



Industrial & Precious Metals Plating

The course consists of 10 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators and supervisors of contract and captive shops performing precious metal plating. The course is also beneficial for industry sales personnel.

Goal

The goal of this course is to provide the student with a broad range of information related to preparing parts for precious metal plating and to exploring each "PM" plating process, what can go wrong and how to solve plating problems.

Course Lessons

1. Preparing Metals for Plating Part 1
2. Preparing Metals for Plating Part 2
3. Reel-to-Reel Plating
4. Industrial Nickel Plating
5. Gold Plating
6. Decorative Gold Plating
7. Silver Plating
8. Palladium, Palladium-Nickel, Platinum & Rhodium Plating
9. Tin Plating
10. Alternatives to Electroplating



Plating Essentials

The course consists of 9 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program benefits individuals who have no experience or training in the art and science of electroplating. Examples are new hires for plating line work, inexperienced supervisors, sales personnel serving metal finishers and managers who want a non-technical/low-technical primer in the subject. This training is also a valuable introductory course for those who intend to go further with more advanced training.

Goal

The goal of this course is to provide greater comfort with terminology, knowledge of coating differences and process equipment used in electroplating operations.

Course Lessons

1. Plating Calculations
2. Introduction: Chemistry, Electricity & Electrochemistry
3. Electroplating Equipment
4. Rack & Barrel Plating
5. Types of Plated Parts
6. Preparing Parts for Plating
7. Popular Plating Processes
8. Common Plating Defects
9. Stripping



Zinc – Zinc Alloy Plating

The course consists of 10 lessons. Each one contains a wealth of valuable, practical information. And if you score 70 or above on the optional exam, you'll receive 1 credit toward certification as a Master Surface Finisher. MSF is the world's most respected – and most widely recognized – designation for finishing industry professionals. Those passing 6 course exams earn the coveted MSF designation.

Who Benefits?

This training program is beneficial for operators and supervisors working of contract and captive shops performing zinc and zinc-alloy plating. The course is also beneficial for industry sales personnel.

Goal

The goal of this course is to provide the student with information related to the metallurgy and corrosion behavior of zinc coatings. Students will also learn the differences between the various zinc plating and zinc alloy plating processes, including potential problems and how to prevent and solve them.

Course Lessons

1. Electroplating Basics for Zinc Platers
2. Introduction – Historical Development & Applications of Zinc Coatings
3. Preparing Parts for Zinc Plating & Post Plate Baking
4. Cyanide Zinc Plating
5. Alkaline Non-Cyanide Zinc Plating
6. Chloride Zinc Plating
7. Zinc Alloy Plating Part 1: Zinc-Nickel
8. Zinc Alloy Plating Part 2: Zinc-Cobalt
9. Zinc Alloy Plating Part 3: Zinc-Iron
10. Chromate Conversion Coatings Over Zinc & Zinc Alloys



Course Calendar & Tuition

Classroom Courses

Electroplating & Surface Finishing Parts 1 & 2 (CEF)

Dates: June 6-8, 2023

Exam Date: June 9, 2023

Registration Deadline: May 23, 2023

Location: Cleveland, OH

Member: \$1,800

Non-Member: \$2,200

Aluminum Finishing

Dates: June 5-8, 2023

Exam Date: June 9, 2023

Registration Deadline: May 23, 2022

Location: Rosemont, IL

Member: \$1,800

Non-Member: \$2,200



Home-Study Courses

Airline & Aerospace Finishing Parts 1 & 2 (CAF)

Member: \$1,400

Non-Member: \$1,800

Aluminum Finishing

Member: \$1,100

Non-Member: \$1,500

Chromium Plating for Engineering Applications

Member: \$900

Non-Member: \$1,300

Corrosion & Salt Spray

Member: \$900

Non-Member: \$1,300

Electroforming

Member: \$900

Non-Member: \$1,300

Electroless Deposition

Member: \$900

Non-Member: \$1,300

Electroplating & Surface Finishing Parts 1 & 2 (CEF)

Member: \$1,400

Non-Member: \$1,800

Industrial & Precious Metals Plating

Member: \$900

Non-Member: \$1,300

Plating Essentials

Member: \$900

Non-Member: \$1,300

Environmental Stewardship Part 1: Wastewater Treatment

Member: \$900

Non-Member: \$1,300

Environmental Stewardship Part 2: Pollution Prevention

Member: \$900

Non-Member: \$1,300

Zinc & Zinc Alloy Plating

Member: \$900

Non-Member: \$1,300



Course Calendar & Tuition

NASF may make adjustments to course dates/times (before registration opens.)
Please check the website for the most current course dates/times.
Please note that courses do require a minimum enrollment to proceed as scheduled.

Web-Based Courses

Courses take place on pre-determined Tuesdays & Wednesdays between 12:00 PM & 2:00 PM ET except where noted with an *

Corrosion & Accelerated Corrosion Tests

Dates: February 7, 8, 14, 15, 21, 22, 28,
March 1 (8 sessions)
Registration Deadline: January 15, 2023
Member: \$975
Non-Member: \$1,300

Electroless Deposition

Dates: March 7, 8, 14, 15, 21, 22, 28, 29,
April 4, 5 (10 sessions)
Registration Deadline: February 15, 2023
Member: \$1,050
Non-Member: \$1,400

Chromium Plating for Engineering App (Hard Chrome)

Dates: April 4, 5, 11, 12, 18, 19, 25, 26 (8 sessions)
Registration Deadline: March 19, 2023
Member: \$975
Non-Member: \$1,300

Environmental Stewardship Part 1: Wastewater Treatment

Dates: August 8, 9, 15, 16, 22, 23, 29, 30 (8 sessions)
Registration Deadline: July 15, 2023
Member: \$1,050
Non-Member: \$1,400

Airline & Aerospace Finishing Parts 1 & 2 (CAF)

Dates: September 5, 6, 12, 13, 19, 30, 26, 27,
October 3, 4, 10, 11, 17, 18, 24, 25, 26, 27 (18 sessions)
Registration Deadline: August 20, 2023
Member: \$1,400
Non-Member: \$1,800

Plating Essentials* (start time 2:30 PM ET)

Dates: September 19, 20, 26, 27, October 3, 4, 10, 11 (8 sessions)
Registration Deadline: September 15, 2023
Member: \$975
Non-Member: \$1,300

Electroplating & Surface Finishing Parts 1 & 2 (CEF)

Dates: October 17, 18, 24, 25,
November 7, 8, 14, 15, 21, 22, 28, 29,
December 5, 6, 12, 13, 19, 20 (18 sessions)
Registration Deadline: September 30, 2023
Member: \$1,400
Non-Member: \$1,800

WEB-
BASED

Custom Course Options

Flexible and Convenient

The Foundation Customized Course Series allows you to design two-to-four-day training courses that perfectly fit the needs and goals of your company, association or public entity.

Training stimulates – **and motivates!** It also keeps workers up to date so they can respond effectively to the needs of the market.

Training sharpens skills, and helps develop new ones, enabling employees at every level to reach their potential, while improving the quality of their work.

Train for Success

The most successful organizations prioritize training and make it an integral part of their culture and their mission.

The Foundation has designed courses for the top aerospace, DOD, medical and electronic companies. A qualified Foundation instructor develops and teaches a curriculum according to your company's needs. Each module takes 45 to 90 minutes. Upon completion of the course, participants receive a certificate and an opportunity to take an optional exam. Upon passing the exam, employees will qualify for the Foundation's certification program.

The Ultimate “Win-Win”

Training and development have significant benefits for employers and employees. Great training accomplishes these 9 goals – and more!

Enhances employee satisfaction and morale

Increases motivation

Boosts efficiencies in process, resulting in financial gain

Increases capacity to adopt new technologies and methods

Encourages innovative thinking

Reduces employee turnover

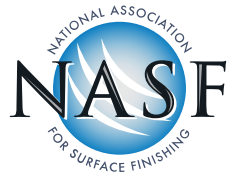
Enhances company image

Increases credibility with business partners

Improves the employer's competitive advantage

Customize to Suit the Organization

Choose any combination of lessons from the courses listed in this catalog to create a training program tailored to your specific needs. Five to six lessons typically require one day to present.



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