

TECHNOLOGY	8:00 AM – 9:30 AM	10:00 AM – 11:30 AM	12:00 PM – 1:30 PM	2:00 PM – 3:30 PM	
3D/ADDITIVE MANUFACTURING	NEW! F10: Application Discovery – Evaluating Real Use Cases for In-Office Metal 3D Printing	NEW! F20: 3D Printed Tools for Additive Manufacturing Environments	NEW! F30: The Ultimate Guide to Metal Additive: Mapping the Process from Discovery to Production	NEW! F40: Metal 3D Printing for Fabrication Shops	
AUTOMATION	NEW! F11: Move to the 21st Century: The Pro's and Con's of Adding Automation to Your Process	F21: Getting Started with Robotics: A Journey to the World of Robotics	NEW! F31: Leading and Preparing an Industry 4.0 Organization and Workforce	NEW! F41: Industrial Internet of Things (IIoT) for the Job Shop	
CUTTING		NEW! F22: Cutting for Advanced Materials		NEW! F42: Automated Processes in Hybrid Induction & Oxy-Fuel Cutting	
FINISHING		C20: ABCs of Infrared		NEW! C40: It's Your Money - Control Your Costs	
		NEW! C21: I Want to Powder Coat, Now What?		C41: Powder Coating Basics	
		NEW! C22: Corrosion Basics and Prevention		NEW! C42: Understanding the Basics of Pretreatment	
FORMING & FABRICATING	F13: Press Brake for Engineers	F23: Machine Safeguarding	NEW! F33: Material Handling	F43: Advanced Press Brake Technologies	
	F14: Coil Processing: Slitting HSS Materials	F24: Roll Forming: Basics and Lubricants	F34: Roll Forming: Tooling and Trouble Shooting	F44: Advanced Solutions for Tube and Pipe	
LASER		NEW! F25: Lasers for Joining Development and Control	NEW! F35: Remote Laser Joining & Interface Applications	F45: Lasers and Laser Systems for Advanced Manufacturing	
LEAN	NEW! F16: Lean Principle: Getting Started with Your Lean Journey	NEW! F26: Lean Tools: Flow & Pull in High Variety Environment	NEW! F36: Lean Principle: OEM Quality Excellence: 6 Practical Steps to Becoming an Award-Winning Supplier	F46: Lean Principle: Strategic Planning and Hoshin Kanri - How to Achieve the Future You See	
MANAGEMENT	NEW! F17: Choosing the Best Source of Growth Capital for Your Manufacturing Business	NEW! F27: Planning for the Present & Paving a Strategic Roadmap	F37: Job Shop Costing, Estimating and Scheduling for Complex Jobs	NEW! F47: Hands-on Workshop - Cultivate & Value Your Leadership	
MARKETING & SALES	NEW! F18: Supercharge Your Networking & Inbound Marketing	NEW! F28: Your Schematic for Assembling a Powerful Digital Marketing Machine	NEW! F38: Build a Sales Strategy & Model for Scalable Growth	NEW! F48: Deliver Superb Customer Service & Build a Customer-Centric Culture	
SMART MANUFACTURING	NEW! F19: Current State of Smart Manufacturing & The Connected Viewpoint	NEW! F29: SMART Manufacturing Basics to Get Started in The Digital World	NEW! F39: Industrial IoT Case Study - Real World Implementation	NEW! F49: Smart Manufacturing and Workforce Ready!	
STAMPING		NEW! S20: Understanding Servo Metal Stamping Presses - Proper Usage, Troubleshooting and Maintenance	S30: ANSI Z224.1 & OSHA 1910.147 Applications of Alternative Methods for Hazardous Energy Control	NEW! S40: Application of Real-Time Visual Monitoring Tool in Stamping	
		S21: Lubricants-1		NEW! S41: Lubricants-2	
WELDING FABRICATION		NEW! W200: The Welding Economy		NEW! W400: Robotic Welding for Job Shops	
WORKFORCE DEVELOPMENT	NEW! F200: Practicing Emotional Intelligence for Workplace Success	NEW! F211: The Future of Talent: Attracting and Retaining The Top Talent for the 21st Century	NEW! F212: Creating Career Path Programs That Empower & Engage	NEW! F213: Pushing Your Envelope: How Smart People Overcome Self-Doubt and Live with Bold Enthusiasm	
WELDING					
CAREER PATH WORKSHOPS	W17: Getting Started in Underwater Welding			1:00 PM	3:00 PM
	W18: Creating a WPS in 60 Seconds			1:00 PM	3:00 PM
PROFESSIONAL PROGRAM	W23: SESSION 1: Additive Manufacturing I			1:40 PM	5:00 PM
	SESSION 2: Modeling			1:40 PM	5:00 PM
	SESSION 3: Arc Welding			1:40 PM	5:00 PM
SPECIAL PROGRAMS	W30: AWS Prayer Breakfast			7:00 AM	8:30 AM

TECHNOLOGY	8:00 AM – 9:30 AM	10:00 AM – 11:30 AM	12:00 PM – 1:30 PM	2:00 PM – 3:30 PM	
3D/ADDITIVE MANUFACTURING		■ F60: Fundamentals of Additive Manufacturing	■ NEW! F70: Small & Large Format Printers for Additive Manufacturing	■ NEW! F80: How Additive Manufacturing Can Accelerate and Advance Your Design	
AUTOMATION		■ NEW! F61: Estimating and Job Costing for Industry 4.0 - The Science of Costing and the Art of Pricing	■ NEW! F71: The Full Potential of Automation and Lights-Out!	■ F81: IIoT Solutions to Better Manage Your Assets	
CUTTING		■ F62: Optimization of Cutting Metals with Fiber and Plasma Machining		■ F82: Comparative Cutting Innovations with Tech Tour	
FINISHING	■ NEW! C50: Lean and Green Cleaning	■ NEW! C60: Mother Earth Still Needs Our Help		■ C80: Identifying and Solving Finishing Defects - See It, Touch It, Fix It	
	■ NEW! C51: Powder System Design for Success	■ NEW! C61: How It's Made: Knowing Where Your Powder and Equipment Come From		■ C81: Lean and Mean - Making Powder Systems Work	
	■ NEW! C52: 1K, 2K, New K and Fluid Delivery Methods	■ NEW! C62: Oven Selection Solved		■ C82: Make Safety a Priority	
FORMING & FABRICATING		■ F63: Effective Safeguarding Risk Assessment	■ NEW! F73: Dust Collection for Fabrication Processes	■ F83: Sheet Metal Design and Press Brake Automation	
		■ F64: Coil Processing: Blanking Techniques and Handling Solutions	■ NEW! F74: Roll Forming: Design and Welding Techniques	■ F84: Roll Forming: Justification and In-Line Punching, Cutoff Dies	
LASER		■ NEW! F65: Quality & Control for Laser Joining Systems	■ NEW! F75: Accelerated & Combination Lasers for Sheet Metal	■ NEW! F85: Traditional & Fiber Laser Cutting for High Performance	
LEAN	■ NEW! F56: Lean Principle: Leadership and the Lean Journey	■ F66: Lean Tools: VSM Addressing Differences Between the Office and Shop Floor	■ F76: Lean Tools: A3 Thinking-Developing People & Solving Problems	■ F86: Lean Tools: Standard Work for Quality and Improvement	
MANAGEMENT	■ F57: Building a Competitive Advantage: Know What Your Business is Worth and Tax Credit Advantages	■ NEW! F67: The Dark Cloud Behind the Silver Lining: Economy in 2020	■ NEW! F77: Planning for the Future: The New Dawn of Manufacturing and Technology	■ NEW! F87: ERP Systems: Selection & Avoiding the ERP Technology Grim Reaper	
MARKETING & SALES	■ NEW! F58: Customer Experience for Manufacturers to Create Digitally-Powered Journeys That Help People Grow	■ NEW! F68: Sustainable Social Media Strategies	■ F78: Stngthen Your Marketing Through The Power of Story & Grow Your Revenue & Grow Your Team		
SMART MANUFACTURING	■ NEW! F59: Productivity, Performance & Quality Management for Smart Manufacturing	■ NEW! F69: Quit Making Excuses and Close the Loop - Now is the Time to Digitize	■ NEW! F79: From Rust-Belt to High-Tech: Transform, Ignite and Disrupt	■ NEW! F89: Artificial Intelligence for Machine Learning & Streamlining Quoting Process	
	■ NEW! S50: Materials-1	■ NEW! S60: Materials-2		■ NEW! S80: Materials-3	
STAMPING	■ NEW! S51: Connectivity-1	■ NEW! S61: Connectivity-2		■ NEW! S81: Connectivity-3	
WELDING FABRICATION		■ NEW! W600: Resistance & Arc Welding For Better Weldability and Hazard Reduction		■ NEW! W800: Improving Lightweight Materials Joining Through Friction Welding	
WORKFORCE DEVELOPMENT	■ NEW! F214: Engaging Manufacturing's Next Generation Through Full Contact Innovation	■ NEW! F215: Conflict & Communication For Strong Leadership	■ NEW! F216: Leadership Skills & Development Workshop (12:00 PM - 4:30 PM)		
WELDING					
SEMINARS	■ W11: AWS Educational Overview of Welding Codes and Standards - Day 1			8:00 AM	5:00 PM
	■ W12: Applied Welding Metallurgy			8:00 AM	4:00 PM
	■ W13: WPS's for Weld Inspection and Test-Taking Tips			8:00 AM	12:00 PM
CONFERENCES	■ W16: 5th International Electron Beam Conference - Day 1			8:00 AM	5:00 PM
PROFESSIONAL PROGRAM	■ W24: SESSION 4: Solid-State Processes			8:00 AM	12:00 PM
	■ SESSION 5: Surfacing & Dissimilar Joining			8:00 AM	12:00 PM
	■ SESSION 6: Welding Metallurgy I			8:00 AM	12:00 PM
	■ SESSION 7: Neural Networks & Machine Learning			1:40 PM	5:00 PM
	■ SESSION 8: Additive Manufacturing II			1:40 PM	5:00 PM
	■ SESSION 9: Welding Metallurgy II			1:40 PM	5:00 PM
RWMA SCHOOL	■ W22: RWMA Resistance Welding School - Day 1			8:00 AM	5:00 PM
EDU. SESSIONS	■ W29: AWS/Weld-Ed Education Conference - Using Advanced Waveforms in Welding Education			9:00 AM	4:30 PM
SPECIAL PROGRAMS	■ W31: AWS Awards/AWS Foundation Luncheon			12:00 PM	2:00 PM

Detailed Education Program session descriptions, speakers, pricing, room locations and more can be found at fabtechexpo.com/edu.

■ = Basic ■ = Intermediate ■ = Advanced

TECHNOLOGY	8:00 AM – 9:30 AM	10:00 AM – 11:30 AM	12:00 PM – 1:30 PM	2:00 PM – 3:30 PM	
3D/ADDITIVE MANUFACTURING	■ NEW! F90: The ROI of 3D Printing: Analyze the Cost of Implementing 3D Printing for Your Business	■ NEW! F100: Impact and Quality Considerations for Additive Manufacturing	■ F110: Lasers and Additive Manufacturing Processes	■ NEW! F120: Safely Adopting Additive Manufacturing on The Production Floor	
AUTOMATION	■ NEW! F91: Effective Automation for Joining in Emerging Technologies	■ NEW! F101: Integrating Robotic Automation into Your Process	■ NEW! F111: Which Robot Application is Right for Your Needs?	■ NEW! F121: Automating the Material Handling Process - Why Now is the Time	
CUTTING		■ F102: Advantages of Waterjet Cutting Machining Technology			
FINISHING	■ C90: Architectural Coatings - Today and Future	■ NEW! C100: Conveying Effectively		■ NEW! C120: Quality Still Counts	
	■ C91: Optimizing Powder Operations	■ NEW! C101: Mastering Batch Powder Coating Operations		■ NEW! C121: Powder Coating Troubleshooting	
	■ NEW! C92: Creative Finishing Solutions	■ NEW! C102: Choose Your Weapon - Finding the Right Liquid Applicator		■ NEW! C122: Automation Roadmap for Liquid Finishing Operations	
FORMING & FABRICATING	■ NEW! F93: A Modular Approach to Turning Non-Value-Added Time on a Press Brake into Productive Time	■ F103: Press Brake Safety	■ NEW! F113: Alternative Forming Processes	■ NEW! F123: Press Brake Hurdles	
	■ F94: Roll Forming: Press Tonnage Rating and Welding Systems	■ F104: Tube & Pipe Lubricants, Bending and Case Studies in Tube Field Failures	■ NEW! F114: Alternative Techniques for Annealing, Testing and Grinding Abrasives	■ F124: Coil Processing: Slitting Thin Materials, Leveling & Deburring	
LASER	■ AWF100: Laser Welding Workshop (8:00 AM - 12:30 PM)			■ NEW! F115: The Use of Additive and Subtractive Lasers in Applications	
LEAN	■ NEW! F96: Lean Principle: Go to Gemba	■ NEW! F106: Lean Tools: Lean Production Shop to a Job Shop			
MANAGEMENT	■ F97: Ensuring Tomorrow: How to Effectively Choose and Prepare Your Successor	■ NEW! F107: Win the Inner Game: Free Yourself of Overwhelm and See Your Highest Potential Come True	■ NEW! F117: Diagnose Your Business: How to Free Yourself from Budget Limitations by Finding and Unlocking Hidden Money in Your Operations	■ F127: Enable the Transition to Next Gen - Family Business	
MARKETING & SALES	■ NEW! F98: Digital Recruiting Strategies & Data for Continuous Improvement	■ F108: Business Builders: Make Business Development a Competitive Advantage	■ F118: Protecting Original Design: The Importance of IP in Metal Forming	■ NEW! F128: A Marketing Framework: From Lead to Sale - Tools & Tips for Fabricators & OEMs	
SMART MANUFACTURING	■ NEW! F99: The Smart Factory & Feasibility with Case Studies	■ NEW! F109: A.I. for Predictive Manufacturing: Zero-Downtime, Zero-Defects	■ NEW! F119: Prevent Digital Failure and Benchmark Your Performance	■ NEW! F129: Smart Manufacturing on Predictable ROI	
STAMPING	■ NEW! S90: Stamping-1	■ NEW! S100: Stamping-2		■ NEW! S120: Stamping-3	
	■ NEW! S91: Sensors-1	■ NEW! S101: Sensors-2		■ NEW! S121: Quality & Tooling	
WELDING FABRICATION		■ NEW! W100: Optimization of Welding Documentation and Continuity Efficiency Using Computer Software			
WORKFORCE DEVELOPMENT	■ NEW! F217: Operational Excellence for Significant and Sustained Performance With Incentive Pay		■ NEW! F219: Leading Innovation & Change Initiatives in Your Organization	■ NEW! F220: Manage, Mentor and Develop Your New Workforce & Staff for The Future	
WELDING					
SEMINARS	■ W11: AWS Educational Overview of Welding Codes and Standards - Day 2			8:00 AM	5:00 PM
	■ W14: "Welding" Don't Be Afraid to Ask			8:00 AM	4:00 PM
	■ W15: Stainless Steel Welding D1.6 Structure			8:00 AM	4:00 PM
CONFERENCES	■ W16: 5th International Electron Beam Conference - Day 2			8:00 AM	5:00 PM
CAREER PATH WORKSHOPS	■ W19: Development of a New Standard for Metal Additive Manufacturing: AWS D20.1/D20.1M, Specification for Fabrication of Metal Components Using Additive Manufacturing			9:00 AM	11:00 AM
PROFESSIONAL PROGRAM	■ W25: SESSION 10: Plenary Session			8:00 AM	9:30 AM
	■ SESSION 11: In-Situ Measurement Techniques			9:40 AM	12:00 PM
	■ SESSION 12: Honorary Symposium for Prof. D. Olson I			9:40 AM	12:00 PM
	■ SESSION 13: Industrial Technology I			9:40 AM	12:00 PM
	■ SESSION 14: Process Sensing & Control			1:40 PM	5:00 PM
	■ SESSION 15: Honorary Symposium for Prof. D. Olson II			1:40 PM	5:00 PM
	■ SESSION 16: Weldability			1:40 PM	5:00 PM
RWMA SCHOOL	■ W22: RWMA Resistance Welding School - Day 2			8:00 AM	5:00 PM

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TECHNOLOGY	8:00 AM – 9:30 AM	10:00 AM – 11:30 AM	12:00 PM – 1:30 PM	2:00 PM – 3:30 PM	
3D/ADDITIVE MANUFACTURING	■ NEW! F130: How MES Transfers Data Efficiently Through The Additive Manufacturing Value Chain & Business Case Method				
AUTOMATION	■ NEW! F131: Sensors, Maintenance and Platforms for Leveraging Technology				
FINISHING	■ NEW! C130: Power Up and Hang On for Efficiency and Savings				
	■ NEW! C131: Using the Dirty Dozen to Optimize Your Powder Coating				
	■ C132: Test for the Best - Best Practices and Measurement Methods for Quality				
LEAN	■ NEW! F136: Lean Principle: Science of Lean Culture and Case Studies				
MANAGEMENT	■ F137: Making Better Decisions as a Business Leader & Tools for Management Success	■ NEW! F147: Financing to Enable Growth & Achieve Project Improvement			
SMART MANUFACTURING	■ NEW! F139: Smart Manufacturing to Successfully Implement the Trifecta; All in Real Time				
WORKFORCE DEVELOPMENT	■ NEW! F221: How to Win With Personalities & Team Engagement				
WELDING					
CAREER PATH WORKSHOPS	■ W20: Starting a Welding Inspection Business			8:00 AM	10:00 AM
	■ W21: Becoming a Certified Welding Accredited Test Facility for Testing Certified Welders			8:00 AM	11:00 AM
PROFESSIONAL PROGRAM	■ W26: SESSION 17: High-Energy Density Processes			8:00 AM	12:00 PM
	■ SESSION 18: Industrial Technology II			8:00 AM	12:00 PM

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EXPERIENCE LEVELS

Use this key along with the Schedule-at-a-Glance to find the education level that meets your needs.

- **Basic**..... Recommended for the attendee who is new to the industry or needs a refresher on the topic.
- **Intermediate**... Designed for the attendee who already has a basic understanding of the subject matter.
- **Advanced**..... For the attendee with several years of experience who is seeking more in-depth information.

EDUCATION TRACK SPONSORS:

AUTOMATION

FANUC

3D/ADDITIVE

 **FAST RADIUS**

LASER



SMART MANUFACTURING



FINISHING FORMING & FABRICATING


A Norican Technology