Personnel Certificate Program: General AM Training Course

A Comprehensive Training Covering the Entire AM Process Chain
Course developed in compliance with ASTM E2659 requirements standards

www.amcoe.org

EARN A DIGITAL BADGE after successful completion of this course. These badges are an innovative way to showcase career knowledge, skills, and abilities obtained through professional development. Add the badges to your digital portfolios or share on social and professional networks.
With more and more industrial sectors adopting additive manufacturing (AM) technology, there is a large demand for a skilled workforce to support the rapid growth of the field. As a leading driver of AM technology, ASTM International is committed to filling the AM knowledge gap by providing world-class training from industry leaders to equip the growing AM workforce with highly valued technical skills. The ASTM International Additive Manufacturing Center of Excellence (AM CoE) has made Education and Workforce Development (E&WD) a key focus area for accelerating AM adoption. AM CoE training responds to industry needs and incorporates the latest technological advances and standards to prepare participants to take on the current challenges in the field.

Formed in 2018, the AM CoE is a collaborative partnership, bringing together industry, government, and academia, and it aims to:

- Accelerate standards,
- Reduce time to market, and
- Increase widespread AM adoption.

**AM CoE Core Focus Areas**

- **Research and Development (R&D)**
- **Standardization and Certification**
- **Education and Workforce Development (E&WD)**
- **U.S. and E.U. Consortia**

**Education and Workforce Development (E&WD)**

**Mission**

Provide a comprehensive program that educates and trains the additive manufacturing workforce at all levels, while continually incorporating new advances to respond to industry needs and leverage standardization, certification, and AM CoE partner expertise.

**Key Differentiators**

- Combined expertise and resources of AM CoE partners
- Course variety and accessibility
- Relevant and timely content
- Focused certification pathways
- Continuous adoption of new technology advancement, standards, as well as qualification and certification practices

**Snapshot**

- **Workshops**
  - Workshops focusing on an overview of the AM value chain and AM applications
- **Specialty Workshops and Seminars**
  - Events focused on specific topics, such as data management and schema
- **Webinar Series**
  - Online programs covering a wide range of AM topics
- **Certificate Program**
  - Sets of courses offered through the AM CoE that build toward earning a role-based certificates
The certificate program provides a concrete learning pathway for professionals to obtain skills for specific AM roles.

**Certificate Program Benefits**
- Tangible proof of training
- Learning pathway to AM roles
- Unique focus on standards

**Certificate Pathways**
Certificate pathways are developed by the AM CoE, informed by the AM community, industry analysis, partner capabilities, and more. Participants take core courses that build toward a certificate for a specific role, and can take electives to earn additional specialized certificates (e.g., Designer).

Certificates follow the internationally recognized Standard Practice for Certificate Programs (E2659-18).

**Certificate Exam**
- Online exam based on the published syllabus
- On successful completion of the exam, participants receive a certificate recognized by the ASTM International AM CoE
- Exams can be taken at attendees’ convenience with an ASTM-recognized proctor

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**Certificate Program Strategy**

1. Define core and specialized skills/knowledge needed for an AM role
2. Map skills to existing AM CoE partner courses
3. Develop new courses to cover remaining skills
4. Tie courses together into a cohesive certificate pathway

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**Individual Role-Based Certificates Curricula**

**Designer**

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<thead>
<tr>
<th>CORE REQUIREMENTS</th>
<th>TAILORED SPECIALIZED ELECTIVES</th>
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<tbody>
<tr>
<td>AM Fundamentals</td>
<td>Ceramics</td>
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<tr>
<td>Design for AM</td>
<td>Polymers</td>
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<tr>
<td>Basics of Certification*</td>
<td>Wire Directed Energy Deposition</td>
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<td>NDI for AM</td>
<td>Fused Deposition Modeling</td>
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<td>Material Handling</td>
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* Tailored for Aerospace, FDA, or other applications
AM CoE’s primary certificate is the General AM certificate, awarded for successful completion of the General AM training course.

- The 3-day course is open to all professionals; it covers core foundational technical knowledge related to common AM practices and considerations.
- The General AM certificate serves as a foundation and prerequisite for additional role-based certificates.
- On completion of the course, attendees will be equipped to take the certificate exam, consisting of 100 multiple-choice questions in three hours.

**First General AM Certificate Course**

**Detailed Description**

**Schedule/Duration**
8 modules taught over 3 days

**Target Audience**
Technicians, managers, engineers, members from government agencies, regulatory bodies, students, and instructors

**Approach**
Face-to-face with hands-on demonstrations and facility visits

**Course Differentiators**
- Ongoing, with continual updates, part of a clear pathway for gaining skills for different AM roles
- High caliber of instruction from leading experts in the field
- Up-to-date information about standards
- Each module handled by independent instructors
- Course developed in compliance with ASTM E2659 requirements standards

**Modules of General AM Course Covered**
- Terminology and AM Process Overview
- Design and Simulation
- Qualification and Certification
- Feedstock
- Mechanical Testing
- Post-Processing
- Safety Issues
- Nondestructive Inspection

**A True Collaboration**
- Collaborative effort among all ASTM International AM CoE partners
- Partners develop syllabi for each module to guide development
- ASTM International AM CoE selects top AM experts to serve as instructors
- Instructors build individualized content using the AM CoE syllabi
- AM CoE partners review content and work closely with instructors to ensure course content quality