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Certification Development Overview



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The Society of Manufacturing Engineers Current Portfolio of Certifications

- ◆ Certified Manufacturing Technologist – CMfgT
- ◆ Certified Manufacturing Engineer - CMfgE
- ◆ Certified Engineering Manager – CEM
- ◆ Certified Enterprise Integrator - CEI



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LEANTM

certification



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Certification Development Overview

- ◆ Pre–Development
- ◆ Development
 - ◆ Role Delineation
 - ◆ Body of Knowledge
 - ◆ Exam Item Writing & Review
 - ◆ Exam Build
 - ◆ Exam Evaluation
- ◆ Launch
- ◆ Continuous Improvement, Development & Maintenance



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Pre-Development

- ◆ **Concept Development**
- ◆ **Recruit Committee Members & Subject Matter Experts**
- ◆ **Initial Proposal of Certification Concept**
- ◆ **Preliminary Role Delineation**
- ◆ **High-Level Body of Knowledge**
- ◆ **Qualitative Concept Assessment**
- ◆ **Hurdle Rate – preliminary validation**
- ◆ **Volunteer Recruitment & Engagement Plan**



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Role Delineation

- ◆ Define the target certification candidate(s).
- ◆ What is it that they do?
- ◆ What skills and knowledge do they need to possess?



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Body of Knowledge

- ◆ **Topical outline of the skills and knowledge that a qualified certification candidate should be competent in.**
- ◆ **Built buy industry expert volunteers.**
- ◆ **Quantitatively and qualitatively validated before exam development starts.**
- ◆ **Weighted by module.**
- ◆ **Reference materials identified and mapped to the body of knowledge.**



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Exam Item Writing & Review for Validity, Reliability, Fairness & Legal Defensibility

- ◆ The SME certification item and examination development process is based upon a number of national guidelines and standards, developed and administered by such groups as:
 - ◆ Council on Licensure, Enforcement, and Regulation.
 - ◆ National Organization of Competency Assurance.
 - ◆ American Psychological Association.
 - ◆ National Council on Measurement in Education.
 - ◆ National Council of Examiners for Engineering and Surveying.
 - ◆ Council of Engineering Specialty Boards.
 - ◆ Association of Boards of Certification.
 - ◆ Educational Testing Service.
 - ◆ American College Testing.
 - ◆ Professional Examination Service.



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Exam Build

- ◆ **Begins after a pool of exam items has been reviewed and accepted by industry content expert volunteers.**
- ◆ **Items for each topic are prioritized for exam inclusion.**
- ◆ **Item inclusion is weighted based on the body of knowledge requirements.**
- ◆ **Set initial passing score.**
- ◆ **Items not included in the exam may be used for a self–assessment or practice exam.**



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Exam Evaluation

- ◆ **“Testing” the test to evaluate the exam composition (2 rounds)**
- ◆ **Adjustments/improvements are made after each round**
- ◆ **Final passing score is determined as a result of the “testing”**



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Launch

- ◆ **Program is open to qualified candidates.**
- ◆ **Requirements and application are available.**
- ◆ **Exam is launched.**
- ◆ **Supporting materials are introduced over time.**



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Continuous Improvement, Development & Maintenance

- ◆ Migration from development team to an Certification Oversight & Appeals Subcommittee comprised of volunteers with requisite knowledge and expertise from industry and academia.
- ◆ Periodic validation of the Body of Knowledge (research based)
- ◆ Annual evaluation of exam performance
- ◆ Annual adjustments to the exam



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Power of Volunteers

- ◆ Traditional certification development: 3 year process
- ◆ High engagement of volunteers working on development: 18–24 months*

****Direct participation and commitment of a significant number of volunteers can dramatically reduce the time it takes to develop a certification!***



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