Instructions

for Participating in
ASHRAE's

Healthcare Facility Design Professional (HFDP)

Certification
Program

Effective date: 10/06/2009

Related Resources

Resources available to help prepare for the HFDP examination include, but are not limited to, the following:

- ASHRAE's HVAC Design Manual for Hospitals and Clinics
- ASHRAE's Healthcare Facilities-Best Practice HVAC Design Considerations and Criteria course
- ASHRAE's Healthcare Facilities-Best Practice Applications of HVAC Systems course
- ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality.
- ASHRAE Transactions. "Comparison of Operating Room Ventilation Systems in the Protection of the Surgical Site." Vol. 108, pt. 2, 2002, p. 3-15. Paper no. 4549.
- ASHRAE Transactions. "Methodology for Minimizing Risk from Airborne Organisms in Hospital Isolation Rooms." Vol. 106, pt. 2, 2000, p. 731-747. Paper no. MN-00-11-2.
- ASHRAE Transactions. "Thermal Comfort, Uniformity, and Ventilation Effectiveness in Patient Rooms: Performance Assessment Using Ventilation Indices." Vol. 106, pt. 2, 2000, p. 748-761. Paper no. MN-00-11-3.
- FGI/AIA Guidelines for Design and Construction of Health Care Facilities, 2006. American Institute of Architects, 2006. Washington, DC
- ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
- NFPA 80, Standard for Fire Doors and Other Opening Protectives, National Fire Protection Association, Quincy MA
- NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilation Systems, National Fire Protection Association, Quincy MA
- NFPA 99, Standard for Health Care Facilities, National Fire Protection Association, Quincy MA
- NFPA 101, Life Safety Code, National Fire Protection Association, Quincy MA
- NFPA 110, Standard for Emergency and Standby Power Systems, National Fire Protection Association, Quincy MA
- The Joint Commission's 2007 Comprehensive Accreditation Manual for Hospitals: The Official Handbook (CAMH)
- CDC's Guidelines for Environmental Infection Control in Health-Care Facilities. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report (MMWR), June 6, 2003.
- CDC's Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Settings, 2005. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report (MMWR), December 30, 2005.

ASHRAE does not warrant that participation in or use of any of the above resources will guarantee successful completion of the examination. Nor does ASHRAE warrant that all information presented in all of the above resources is non-contradictory. However, ASHRAE will do its best to avoid testing contradictory, out-of-date, or inaccurate information.

American Society of Heating, Refrigerating and Air-Conditioning Engineers **Healthcare Facilities Design Professional Detailed Content Outline**	Items			
	Cognitive Level			Totals
	Recall	Application	Analysis	
I. Medical Background Information	**5**	**4**	**1**	**10**
A. Terminology 1. Recognize relevant medical terms (e.g., immune compromise) 2. Demonstrate understanding of various healthcare occupancy types **B. Equipment** 1. Describe relationship of medical equipment to HVAC design 2. Identify basic medical equipment **C. Departments and Medical Procedures** 1. Apply understanding of medical procedures to room designs 2. Apply HVAC design to medical functional areas **D. Airborne vs. Contact Infection and Contamination** 1. Distinguish between airborne and contact transmission of pathogens 2. Demonstrate understanding of transmission, infection, and diseases **E. Common Disease Organisms** 1. Describe the physical characteristics of disease organisms 2. Describe conditions of growth of disease organisms **F. Contamination of Domestic Water Supply** 1. Evaluate conditions under which pathogens grow 2. Describe known amplification sites for pathogens 3. Identify control methods for limiting pathogen growth				
II. Standards and Guidelines for HVAC System Design for Healthcare Facilities	**6**	**2**	**0**	**8**
A. Standards and Guidelines 1. Recognize common standards from ASHRAE and NFPA 2. Recognize common guidelines from CDC and AIA 3. Recognize requirements of the Joint Commission **B. Regulatory Codes** 1. Recognize requirements of model building codes 2. Recognize requirements of CMS 3. Demonstrate understanding of energy code requirements 4. Recognize state and local requirements				

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III. HVAC System Design for Healthcare Facilities	**15**	**22**	**8**	**45**
A. Static Pressure Control 1. Identify types of rooms that require static pressure control 2. Apply methods to accomplish static pressure control 3. Describe methods for measurement, notification, and documentation of static pressure control **B. Energy Efficiency** 1. Determine inefficiencies in healthcare system design 2. Apply aspects of energy efficiency specific to healthcare 3. Describe exemptions from the energy standard 4. Demonstrate knowledge of limitations of energy saving strategies 5. Demonstrate understanding of variable volume system application 6. Demonstrate knowledge of energy use and management 7. Calculate cost/benefits of energy efficient systems 8. Articulate energy recovery technologies 9. Integrate sustainability into HVAC design **C. Room Air Distribution** 1. Design systems with proper air flows and pressurizations 2. Calculate air flow rates to comply with room air change rates 3. Demonstrate understanding of the fundamentals of diffuser placement 4. Diagnose improper room air distribution and pressurization 5. Describe psychrometric sensor placement **D. Equipment and Application** 1. Demonstrate knowledge of air handling systems design 2. Identify security concerns related to HVAC 3. Locate equipment 4. Demonstrate knowledge of psychrometric principles				
IV. Unique Requirements for Healthcare Facilities	**11**	**22**	**4**	**37**
A. Central Plants - Describe need for redundancy to current standards **B. Medical Equipment** 1. Demonstrate understanding of contribution to loads 2. Demonstrate understanding of special HVAC requirements				

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3. Describe major diagnostic and treatment equipment 4. Describe application of sterilizers **C. Fire and Life Safety (Including Smoke Control)** 1. Describe smoke management requirements for healthcare facilities (e.g., OR and patient room) 2. Demonstrate understanding of ventilation system requirements for medical gas storage areas 3. Demonstrate understanding of healthcare facility compartmentalization **D. Operations and Maintenance** 1. Maintain equipment accessibility 2. Maintain functionality during maintenance 3. Demonstrate understanding of healthcare facility operations 4. Describe consequences of continuity of service 5. Prescribe procedures for abnormal operation conditions **E. Infection Control** 1. Describe the primary elements of an ICRA process 2. Describe the role of the HVAC designer in the ICRA process 3. Demonstrate understanding of how the ICRA affects mechanical specifications 4. Demonstrate understanding of the various ICRA engineering controls used during construction 5. Demonstrate understanding of contamination control 6. Describe strategies for epidemiology related to HVAC **F. Disaster Mitigation, Management and Recovery** 1. Demonstrate understanding of design contigencies following utility system failure 2. Evaluate needs following catastrophic events 3. Demonstrate understanding of current literature 4. Demonstrate understanding of hazard vulnerabilty analysis **G. Controls and Instrumentation** 1. Demonstrate understanding of HVAC system monitoring strategies 2. Demonstrate understanding of room pressure controls 3. Monitor mechanical, electrical, and fire shut down controls 4. Monitor temperature and humidity controls				

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H. Testing, Balancing, and Commissioning 1. Demonstrate understanding of existing conditions prior to renovation 2. Recognize performance metrics of commissioning 3. Describe test procedures for commissioning various areas requiring unique pressure relationships 4. Demonstrate understanding of various control sequences 5. Prepare reports per guidelines and standards				
TOTALS	**37**	**50**	**13**	**100**

Renewal Requirements for ASHRAE Certification Programs

Each Certificant is required to renew his/her certification every three years. The renewal process includes submittal of a renewal fee ($125 for members, $195 for non-members) and evidence of earning 45 ASHRAE Continuing Education (ACE) units during each three-year renewal period.*

The three-year renewal period starts on December 31 of the year in which the Certificant earns the certification. For example, a Certificant who earns the certification anytime in 2008 will have a renewal deadline of December 31, 2011.

Individuals who fail to submit renewal fees and evidence of the required ACEs by the December 31 deadline will be considered as "non-renewing," notified accordingly, and advised to cease using the specific certification designation after their names. The names of non-renewing Certificants will be removed from the list of Certificants on ASHRAE's website.

To be reinstated, non-renewing Certificants must submit the renewal fee, a reinstatement fee ($60), and evidence of the required ACEs by December 31 of the year following their active status. After that date, non-renewing Certificants must follow the same process as that for the initial application. Extenuating circumstances will be reviewed on a case-by-case basis by the Committee.

Acceptable Methods of Obtaining ACE credits

Type	Credits
Successful completion of a course in a related field from an accredited institution of higher learning Note: To qualify for this credit, a course must be offered regularly and must conclude with a test that sets a passing grade.	15 ACEs per credit hour (semester system) OR 10 ACEs (quarter system)
Patent Note: Credit can be claimed after a patent is issued and the inventor submits details to the board. The invention must be related to engineering.	10 ACEs
Publication of article/paper/book in recognized peer reviewed journal in relevant field (max. 3 per year). Note: A "news" article in a technical or professional bulletin is not considered a published paper.	10 ACEs per published item
Active participation in a professional or technical society relevant to the field Note: The certificant must serve as an officer and/or must actively participate in a committee of the organization. PDH credits are earned at the end of each year of service.	2 ACEs per year per organization
Writing ASHRAE certification exam items in relevant field	5 ACEs per exam
Accreditation Visit Evaluator (or ASHRAE approved equivalent)	3 ACEs per year
Professional awards	2 ACEs per award
Teaching of approved courses and workshops in relevant field Note: Teaching credit is valid for teaching a course or seminar for the first time only. It does not apply to faculty performing regular duties.	ACEs are determined by multiplying by two (2) the total number of course hours (for preparation time).
Attendance at meetings and conferences (e.g. National, Annual, Regional) or special conferences relevant to the field	Qualifying seminars and workshops will be based on one ACE unit for each hour of attendance.
Attendance and completion of approved short courses and other continued education activities in relevant field	Qualifying seminars and workshops will be based on one ACE unit for each hour of attendance.

*Certificants are not required to submit a report of Professional Development activities as part of certification renewal. A percentage of Certificants are randomly chosen for audit each year. If audited, a report of continuing professional development with documentation must be submitted to the Certification Coordinator for review.

Activities that qualify for ASHRAE's Continuing Education units **might** also qualify for continuing education credits (e.g., PDHs, CEUs, or LUs) from other credentialing bodies or organizations. The individual is responsible for contacting the relevant governing body to determine whether an activity qualifies for that body's continuing education credit.

For questions about any of the information about ASHRAE's certification renewal requirements, including clarification of acceptable and reportable qualifying activities, please contact ASHRAE's Certification Coordinator at certification@ASHRAE.org.