ABII American Board of Imaging Informatics

Exam Content Outline

Implementation Date: June 2007

1.	Procurement	5%
2.	Project Management	5%
3.	Operations	10%
4.	Communications	10%
5.	Training and Education	5%
6.	Image Management	20%
7.	Information Technology	15%
8.	Systems Management	10%
9.	Clinical Engineering	10%
10.	Medical Informatics	10%

The Exam Content Outline lists the areas to be covered and the weightings reflecting their relative importance. Content specifications are developed by determining what imaging informatics staff at entry level is required to do on the job, and then defining the knowledge and skills necessary to perform those tasks.

(A detailed *Exam Content Outline* continues on following pages)

1. Procurement (5%)

A. *Determine organization readiness for electronic environment*
   1. Organization strategic plan and policies
   2. Key readiness factors
   3. Methods of needs analysis

B. *Establish and implement a process for vendor selection*
   1. Information collection tools and the Request For Proposal
   2. Vendor response analysis tools

C. *Negotiate contracts with vendors.*
   1. Standard components of contracts
   2. Negotiation skills; how to read a contract

2. Project Management (5%)

A. *Identify goals, scope, risks and key members of project team*
   1. Clarification techniques
   2. Common risks for projects

B. *Evaluate the feasibility of a project*
   1. Needs assessment
   2. Financial viability

C. *Utilize common project management tools*
   1. Forms for documentation of initiating, planning, executing, monitoring and closing processes
   2. Budget, cost schedule, resource, quality and procurement plan

3. Operations (10%)

A. *Design and implement quality improvement (QI) procedures*
   1. Philosophical basis of QI
   2. QI problem-solving strategies
   3. Tools for problem identification and analysis
   4. Target areas for improvement

B. *Develop and implement policies and procedures*
   1. System Management
   2. User management

C. *Ensure compliance with federal regulations*
   1. HIPAA
   2. MQSA for digital mammography

4. Communications (10%)

A. *Recognize roles and relationships in healthcare settings*
   1. Organizational chart
   2. Medical specialties
   3. Organizational theory
   4. Customer service methods

B. *Communicate with healthcare professionals using appropriate medical terminology*
    1. Anatomy, physiology and pathology
    2. Common radiographic positions
    3. Imaging planes
    4. ICD, CPT
    5. Modality-specific terminology
C. *Alert clinical staff about issues regarding system availability or changes*
    1. Downtime
    2. Upgrades
    3. Changes in workflow
    4. Methods
    5. Plans and techniques based on user roles
D. *Provide decision-makers (business units, CIO, etc.) with information about system changes*
    1. Planning sessions
    2. Technology and procedure change management
    3. Outcome analysis
E. *Develop user feedback mechanisms*
    1. Reporting tools
    2. Surveying methods

5. Training and Education (5%)

A. *Perform needs assessment to determine training needs*
    1. Types of learners
    2. Learning styles
    3. Methods
    4. Instructional objectives
B. *Evaluate and select training programs according to user needs*
    1. Characteristics of adult learners
    2. Instructional methods
    3. Instructional tools
    4. Educational resources
C. *Implement training or educational programs*
    1. Types of programs
    2. Institutional resources
D. *Evaluate effectiveness of training.*
    1. Methods of assessment

6. Image Management (20%)

A. *Manage the design of the environment for viewing and interpreting images*
    1. Ergonomics considerations
    2. Environmental factors
    3. Room layout physical considerations

B. *Evaluate the human-computer interface*
    1. EMR / RIS / PACS / dictation integration
    2. Usability
    3. Key image selection and image annotation
    4. Input devices
    5. Display devices
C. *Determine optimal image flow and implement process that ensures data integrity*
    1. Post-acquisition processing
    2. Compression
    3. Image workflow
    4. Teaching files
    5. Clinical trials
    6. Acquisition and display terminology
    7. Reporting and results communication
D. *Import and export outside studies into a PACS*
    1. Policies and procedures
    2. Workflow procedures (e.g., IHE, PDI)
    3. Data integrity
    4. Recording and digitizing technology
    5. Standards of file exchange

7. Information Technology (15%)

A. *Assess storage and archiving needs and determine appropriate architecture*
    1. Architectures
    2. Storage network protocols
    3. Archive media
    4. Methods for storage management
    5. Metrics
B. *Design and specify network architecture*
    1. Network protocols
    2. Transmission protocols
    3. Load balancing and fault tolerance
    4. Network components and hardware
    5. Network configuration
    6. Network metrics
C. *Implement and maintain appropriate hardware and software*
    1. Hardware components
    2. Software components
    3. Basic server architecture
D. *Retrieve information from databases for operations, quality assurance and planning purposes*
    1. SQL
    2. Key performance indicators: utilization, performance, uptime, capacity, exceptions, undictated exams, lost studies

3. Database design
4. Dashboard concepts

E. *Identify and implement IT standards*
   1. Methods to identify appropriate standards (e.g., LDAP, others)
   2. XML over HTTP
   3. W3C: World Wide Web Consortium
F. *Develop appropriate replacement schedule*
   1. Obsolescence planning
   2. Technology lifetime
   3. Moore's Law

8. Systems Management (10%)

A. *Determine requirements for optimal, cost effective system capacity and throughput*
   1. Study size calculations
   2. Scalability considerations
   3. Impact of new technology (e.g., 64-slice CT)
   4. Licensing models: concurrent versus fixed seat
B. *Plan disaster recovery and business continuity strategies*
   1. Policies and procedures
   2. FMEA (failure modes effect analysis)
   3. Data and system recovery
C. *Use problem management and system availability tools and strategies*
   1. Availability monitoring and problem detection
   2. Troubleshooting / problem diagnosis
D. *Plan and evaluate data migration procedures*
   1. Strategies for migration
   2. Physical data transfer considerations
   3. DICOM standardization and data integrity
   4. Work-product migration (key images, annotations, presentation states)
   5. Cost and performance models
   6. User impact
E. *Maintain data security and individual privacy*
   1. Standards, policies and guidelines
   2. Security strategies
   3. Privacy

9. Clinical Engineering (10%)

A. *Assess imaging discipline capabilities*
   1. Digital radiography and mammography
   2. Fluoroscopy
   3. Interventional radiology and cardiology
   4. Computed tomography (CT)
   5. Magnetic resonance imaging (MRI)
   6. Ultrasound
   7. Nuclear medicine, SPECT, PET and related fusion modalities
   8. Radiation therapy

9. Other imaging domains

B. *Supervise modality integration*
    1. DICOM configuration
    2. DICOM validation
    3. DICOM transfer syntax
    4. DICOM tools
C. *Establish a program for image display quality control*
    1. DICOM Grayscale Standard Display Function (GSDF) part 14
    2. AAPM task group 18
D. *Recognize hazards specific to the healthcare environment*
    1. Electrical hazards
    2. Ionizing radiation
    3. Magnetic fields
    4. Infection / biohazards
    5. Sterile field procedures (e.g., operating room)

10. Medical Informatics (10%)

A. *Identify and implement medical imaging standards*
    1. DICOM
    2. HL-7
    3. MQSA
    4. ACR
    5. ICD-9, CPT, SNOMED
B. *Apply appropriate IHE guidelines*
    1. Integration profiles
    2. RSNA connectathon results
C. *Integrate image architecture into organization's long-range plan*
    1. Enterprise archiving
    2. Master Patient Index (MPI)
    3. RHIOs (regional healthcare information organizations)
    4. Enterprise imaging specialties (cardiology, pathology, etc.)