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## Informatics Nurse Board Certification Test Content Outline

There are 175 questions on this examination. Of these, 150 are scored questions and 25 are pretest questions that are not scored. Pretest questions are used to determine how well these questions will perform before they are used on the scored portion of the examination. The pretest questions cannot be distinguished from those that will be scored, so it is important for a candidate to answer all questions. A candidate's score, however, is based solely on the 150 scored questions. Performance on pretest questions does not affect a candidate's score.

This Test Content Outline identifies the areas that are included on the examination. The percentage and number of questions in each of the major categories of the scored portion of the examination are also shown.

Category	Domains of Practice	No. of Questions	Percent
I	System Life Cycle	41	27.00%
II	Human Factors	10	7.00%
III	Information Technology	30	20.00%
IV	Information Management and Knowledge Generation	27	18.00%
V	Professional Practice, Trends, and Issues	15	10.00%
VI	Models and Theories	12	8.00%
VII	Management and Leadership	15	10.00%
	<b>Total</b>	<b>150</b>	<b>100%</b>

# Informatics Nurse Board Certification

## Test Content Outline

### I. System Life Cycle

- A. System Planning
  - 1. Multidisciplinary approach
  - 2. System planning concepts (e.g., tracking tools, gap analysis, scope definition)
  - 3. Strategic goals and priorities (including desired outcomes)
  - 4. Feasibility analysis and needs assessment
  - 5. Vendor, product, and market analysis
  - 6. Resource considerations and benefit analysis/return on investments
    - a. Budget (e.g., time, equipment, personnel, supplies)
    - b. Return on investment
    - c. Benefits (e.g., tangible and intangible, cost benefits)
- B. System Analysis
  - 1. Process analysis
  - 2. Process diagrams
    - a. decision trees
    - b. flow charts
  - 3. Functional specifications (e.g., end-user requirements)
  - 4. Design specifications (programmer instructions)
  - 5. Request for Information (RFI)
  - 6. Request for Proposal (RFP) development
  - 7. System selection and contract issues
  - 8. Product market analysis (e.g., systems, vendor comparisons, products available, product evaluation tool development)
  - 9. Final report and recommendations (e.g., purpose of the report, white paper, presentation, executive summary, techniques of presenting data)
- C. System Design
  - 1. Critical success factors (e.g., end user acceptance, stability, performance, system economy, fulfillment of design specifications)
  - 2. Algorithms and principles of logic
  - 3. Principles of hardware, software and interoperability design
  - 4. Process redesign and reengineering concepts
  - 5. Logical database design
  - 6. Physical database design
  - 7. Model design (e.g., iterative process, end-user validation within process)
- D. System and Functional Testing
  - 1. Testing plan (e.g., goals, outcomes, participants, specifications)
  - 2. System elements to be tested (e.g., components, features, interfaces, links, devices, reports [hard and soft copies], screens)
  - 3. Test scripts
  - 4. Testing methods (e.g., system environments, automated, manual)
  - 5. Evaluation, issue resolution, and retesting
  - 6. Alpha and beta testing

## **Informatics Nurse Board Certification Test Content Outline**

- E. Education of Multidisciplinary Stakeholders
  - 1. Teaching plan
  - 2. Adult teaching/learning principles (Knowles principles)
  - 3. Educational technologies (e.g., help screens, computer based training, virtual reality, podcasts, MP3)
  - 4. Educational settings (i.e., learning environments)
  - 5. Training materials (e.g., hands-on, screen shots, modules, handouts, pocket guides)
  - 6. Evaluation of sessions
- F. System Implementation
  - 1. Implementation strategies (e.g., phased roll out vs. “big bang”, pilot, parallel system implementation)
    - a. user
    - b. system
  - 2. Conversion and go-live
    - a. command center (e.g., support dispatch, centralized call center)
    - b. user support (e.g., super users, vendor support, design and build team)
    - c. issue management (e.g., logging and resolution)
  - 3. System stabilization (transition between go-live and full-system adoption e.g., shadow system concerns, legacy system issues, staff overtime monitoring)
- G. System Evaluation, Maintenance, and Support
  - 1. Operational (e.g., planned and unplanned downtime events and procedures, day to day system support)
  - 2. Technical (e.g., assess current hardware for adequacy, archive, disk space)
  - 3. Social and cultural (e.g., super users, internal marketing, champions)
  - 4. Enhancements and upgrades (including technical change management)
  - 5. User support (e.g., help-desk, user troubleshooting, issue resolution sequence/escalation)
  - 6. Ongoing analysis (e.g., ongoing issue identification and resolution, ongoing performance testing, improvement request, future enhancements, facility and vendor user groups)

## **II. Human Factors**

- A. Ergonomics (e.g., physical factors in device and software design and use)
- B. Software and User Interface (e.g., usability, learnability, memorability, likeability, commonality, intuitive)

# Informatics Nurse Board Certification

## Test Content Outline

### III. Information Technology

- A. Hardware
  - 1. Legacy systems
  - 2. Technical specifications (e.g., compatibilities, limitations, capabilities, systems requirements, with new and legacy systems)
  - 3. Devices (e.g., cards [video, audio, graphical], input, output, mobile [computers on wheels, tablets, PDAs])
  - 4. Processors
  - 5. Storage
  - 6. Networks (e.g., types of networks [wireless, LAN, WAN, cable], bandwidth)
  - 7. Platform
- B. Software
  - 1. Functional and technical specifications (e.g., compatibilities, limitations, capabilities, systems requirements)
  - 2. Types of software (the characteristics of operating systems, applications, and utilities)
  - 3. Programming and other digital languages (the characteristics of and uses for... e.g., COBOL, C++, SQL, HTML, XML, JAVA)
  - 4. Database structures, reporting, and querying
  - 5. Usability
  - 6. Integration (e.g., communication between different systems/software; interfaces, data sharing)
- C. Communications Technologies
  - 1. Interfaces
  - 2. Telecommunications
  - 3. Standards (the characteristics of and uses for...e.g., HL7, IEEE, ASTM, ISO)
  - 4. Protocols (the characteristics of and uses for...e.g., TCP/IP, FTP, SMTP)
  - 5. Collaborative tools (e.g., Sharepoint, Webex)
- D. Data Representation
  - 1. Alphanumeric
  - 2. Audio
  - 3. Imaging (e.g., Picture Archiving and Communication System [PACS], digital photography)
  - 4. Video
  - 5. Graphical (e.g., vital signs, laboratory values, pain scales, fluid balance, aggregate data, Gantt charts)
- E. Security and Confidentiality
  - 1. Physical security
  - 2. User security (e.g., biometrics, password protections, tokens, role limited access, authentication)
  - 3. System security and integrity (e.g., encryption, protecting the system from unauthorized access, data ownership)
  - 4. Health Insurance Portability and Accountability Act of 1996 (HIPAA)
  - 5. Audit Trails
  - 6. Backups
  - 7. Intrusions and Infections (threats, prevention, and remedies, e.g., firewalls, virus protection)
  - 8. Information system disaster planning (natural and man made threats, recovery plans)

# **Informatics Nurse Board Certification Test Content Outline**

## **IV. Information Management and Knowledge Generation**

- A. Data
  - 1. Identifying data sources and requirements (e.g., minimum data sets, data flows, regulatory requirements)
  - 2. Classification, nomenclature, and taxonomies
  - 3. Data outputs
  - 4. Data integrity and validity (e.g., error traps, encryption, verification of data, reliability of data)
- B. Information
  - 1. Data aggregation and warehousing
  - 2. Data mining
  - 3. Transformation and analysis (e.g., information processing, information validation)
  - 4. Personal health records
  - 5. Data presentation
- C. Knowledge
  - 1. Patterns and contexts
  - 2. Outcome probabilities and user/system actions
  - 3. Support for evidence-based/best practices
  - 4. Benchmarking
  - 5. Compliance reporting
- D. Wisdom
  - 1. Expert and rule-based decision support systems (types of or examples of technologies)
  - 2. Application of knowledge, judgment and experience
    - a. Incorporation of clinical practice guidelines
    - b. Decision support
    - c. Decision making
  - 3. Knowledge engineering

## **V. Professional Practice, Trends, and Issues**

- A. Functional Areas of the Informatics Nurse
  - 1. Administration
  - 2. Analysis
  - 3. Compliance and Integrity Management
  - 4. Consultation
  - 5. Coordination, Facilitation and Integration
  - 6. Development
  - 7. Educational and Professional Development
  - 8. Research and Evaluation
  - 9. Policy Development and Advocacy
  - 10. Telehealth
- B. Trends and Issues
  - 1. Informatics trends (e.g., interoperability, transportability and scalability, Regional Health Information Organizations [RHIOS])
  - 2. Health care industry trends (e.g., Telemedicine, Biomedical Engineering and IT Integration, licensing issues)
  - 3. Payment Systems (e.g., email reimbursement, fee for service, reimbursement programs, capitation)
  - 4. Regulatory monitoring and accreditation requirements (e.g., the Joint Commission, Centers for Medicare and Medicaid Services [CMS], Leapfrog, Institute of Medicine [IOM], NPSG)

## **Informatics Nurse Board Certification Test Content Outline**

- C. Professional Practice
  - 1. ANA Scope and Standards of Nursing Informatics Practice
  - 2. Nursing Code of conduct
  - 3. Legal Issues (e.g., eICU, malpractice, liability, patient data misuse, proprietary data misuse)
- D. Ethics
  - 1. Protection of patient interests
  - 2. Protecting proprietary information
  - 3. Code of Ethics (International Medical Informatics Association, American Nurses Association)
  - 4. Fair distribution of resources (e.g., digital divide, project priorities)

### **VI. Models and Theories**

- A. Foundations of Nursing Informatics
  - 1. Nursing informatics theories and models
  - 2. Nursing data sets, classification systems and nomenclatures
- B. Related Theories and Sciences (concepts of....)
  - 1. Communication theories
  - 2. Information sciences
  - 3. Computer Science
  - 4. Behavioral theories
    - a. Group dynamics
    - b. Change (e.g., Lewin, grief and loss within change)
    - c. Organizational behavior
    - d. Organizational theories
    - e. Cognitive
    - f. Novice to Expert
  - 5. Systems theory
  - 6. Project management theories

### **VII. Management and Leadership (application of...)**

- A. Project Management
- B. Policies and Procedures
- C. Strategic Planning
- D. Financial Management
- E. Quality and Outcomes Management (e.g., patient care, patient outcomes)
- F. Organizational Change Management

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