

# Introduction to Health Informatics (HI) 101 Series

## Course Syllabus

### **DESCRIPTION:**

Introduction to Health Informatics (101) offers an overview of the field of health informatics by providing students with fundamental knowledge of the concepts of health informatics and how technology can be used in the delivery of health care. The course is intended to increase VA workforce capacity for the design, configuration, use, and maintenance of informatics interventions that improve health care delivery to our nation's veterans. Geared towards the community college level, this web-based course is based on the content offered in conjunction with Bellevue College and developed for use in the Office of the National Coordinator (ONC) for Health Information Technology Workforce Development Program.

### **GOALS & OBJECTIVES:**

Upon completion of all six modules, participants will have:

- Explored how technology can be used to improve health care delivery in health care organizations and in public health.
- Acquired breadth of knowledge of the principles of health informatics.
- Developed basic skills in using health informatics principles to improve practice.
- Acquired a conceptual and theoretical framework of the design, development, and implementation of health information systems.
- Acquired a basic understanding of educational and instructional design theory and principles and how the principles can be applied to deliver effective training to users of health information systems.

### **PREREQUISITES:**

There are no prerequisites for this course. It is open to anyone interested in health informatics. There are no course fees and no tuition requirements for the series.

### **LEARNING HOURS AND CERTIFICATION:**

Upon successful Module completion, students have access to a general education certificate through TMS 2.0. Completion of the entire series is worth a total of 45.25 learning hours. The individual Module learning hours are available as follows:

- Module 1: 6.25 hours
- Module 2: 8 hours
- Module 3: 5 hours
- Module 4: 6 hours
- Module 5: 10 hours
- Module 6: 10 hours

**COURSE FORMAT:**

This series includes a mix of video lectures and individual activities. Course materials include:

- **Required Lectures:** These constitute the equivalent of textbook material for this series and comprised the material in each module post-test. The lecture content is available in four different formats:
  - Voice-over PowerPoint presentations
  - Audio Files
  - Audio Transcripts
  - PowerPoint PDFs
- **VA View Lectures:** VA colleagues discuss the module’s topics in the context of your organization.
- **Industry Expert Perspectives:** Some modules include presentations by national health IT luminaries sharing their perspectives on varied health IT topics.
- **Activities:** Questionnaires and quizzes
- **Optional Lectures:** Supplemental lectures provide additional information on module topics and explore the subjects in more depth.

**TIMEFRAMES:**

Course work is asynchronous (independent, self-paced).

Title	Timeframe
Module 1: Overview of Health Informatics	6.25 hours
Module 2: Electronic Health Records and Data Standards and Exchange	8 hours
Module 3: Workflow Analysis and Process Redesign	5 hours
Module 4: Usability and Human Factor	6 hours
Module 5: Systems Design and Designing for Safety	10 hours
Module 6: Effective Training for HIT	10 hours

# Module Information

## Module 1: Overview of Health Informatics

**Course Description:** This module will introduce participants to organizations and landmark documents that have contributed to the emergence of Health Informatics as an important discipline in improving the quality and safety in patient care. The nature of Health Informatics as a discipline and key roles and competencies of health informatics practitioners will be described. Three topic areas: History of Quality Improvement and Patient Safety, Professional Organizations and What is Health Informatics are presented.

### Learning Objectives:

1. Define information management, information technology, and informatics.
2. Describe various ways in which HIT has evolved to improve quality or enhance patient safety.
3. Summarize the informatics drivers and trends.
4. Describe the origins, current focus, and relationships among the following standards development organizations: Health Level 7 (HL-7), Healthcare Information Technology Standards Panel (HITSP), and Office of the National Coordinator for Health Information Technology (ONC) Health IT Standards Committee.

**Learning Hours:** 6.25

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## Module 2: Electronic Health Records and Data Standards and Exchange

**Course Description:** This module will define Electronic Health Records (EHRs) and Personal Health Records (PHRs) and describe how the use of data standards can facilitate health information exchange. It will also introduce participants to several key topics related to the design and use of EHRs. Participants will learn about the relationship between Data Standards, Clinical Practice Guidelines and Evidence Based Care to Clinical Decision Support Systems.

### Learning Objectives:

1. Compare and contrast electronic medical record (EMR) with electronic health record (EHR).
2. Describe the emergence of Personal Health Records and their implications for patients, health care providers, and health systems.
3. Describe the fundamental requirements of an effective Clinical Decision Support System.
4. Describe how the principles of health care data exchange and health care data standards relate to patient care, productivity and data analysis.
5. Identify the more common controlled vocabularies in use today: ICD, CPT, NDC, RxNorm, LOINC and SNOMED CT.

**Learning Hours:** 8

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### **Module 3: Workflow Analysis and Process Redesign**

**Course Description:** This module covers the fundamentals of health workflow process analysis and system redesign. Graphical process representation using flow chart diagrams, as well as methods for acquiring the clinical process knowledge needed for diagramming and analysis, are also addressed. The module introduces the concepts and principles of human-computer interaction and human factors as they relate to performance improvement.

#### **Learning Objectives:**

1. Discuss the usefulness of workflow analysis in identifying opportunities for improvement.
2. Create a workflow diagram based upon the application of a systematic approach to workflow analysis.
3. Describe strategies to gain acceptance of changes in work processes.
4. Discuss the human-centered design framework and how it is applied to process redesign.

**Learning Hours:** 5

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### **Module 4: Usability and Human Factors**

**Course Description:** This module provides an introduction to the discipline of human factors with a particular focus on human attention and mental workload, a concept derived from applied cognitive psychology. Analysis of human error as well as usability evaluation methods to evaluate the design of the Electronic Health Record and medical devices to prevent user errors and enhance patient safety are also addressed. The module introduces the concept of decision-making and the role of Clinical Decision Support Systems in providing cognitive support as well as perpetuating unintended consequences with recommendations for redesign considerations based upon Human Factors analysis.

#### **Learning Objectives:**

1. Describe how the concepts of mental workload, selective attention, and information overload affect usability.
2. Describe the different dimensions of the concept of human error.
3. Discuss how human factors analysis can be applied to the study of the Electronic Health Record and medical devices for usability and error prevention.
4. Discuss the advantages and disadvantages (unintended consequences) of Clinical Decision Support Systems (CDSS) in terms of cognitive support.

**Learning Hours:** 6

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## **Module 5: Systems Design and Designing for Safety**

**Course Description:** This module describes approaches to the identification of system requirements and strategies for the development of safe and effective systems. The focus is on user-centered design, incorporating typical users early in the design process and doing formative evaluations using realistic testing scenarios. Application of usability principles and heuristics to the design of Computerized Provider Order Entry (CPOE) systems that can anticipate and avoid errors is also addressed.

### **Learning Objectives:**

1. Describe principles of sound design to support usability.
2. Identify common sources of error documented in research studies in medicine.
3. Explain principles underlying the design of healthcare systems for safety.

**Learning Hours:** 10

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## **Module 6: Effective Training**

**Course Description:** This module describes approaches to designing effective training strategies for adult learners. The focus is on conducting a training needs assessment, creating lesson plans, selecting the appropriate teaching strategy and modality for your audience, and evaluating student outcomes.

### **Learning Objectives:**

1. Identify a process for developing and implementing an instructional needs assessment.
2. Describe a systematic approach to developing an effective lesson plan.
3. Outline a process for designing program evaluations and assessing learner outcomes.

**Learning Hours:** 10