

**ITT Technical Institute**

**HM1310**

**Information Systems and Technology in  
Healthcare**

**Onsite and Online Course**

**SYLLABUS**

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**Credit hours:** 4.5


**Contact/Instructional hours:** 56 (34 Theory Hours, 22 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisite: GS1145 Strategies for the Technical Professional or equivalent

**Course Description:**

This course introduces the basic principles and mechanics of the electronic health record, data retrieval and storage, and healthcare computer systems. Topics include: the use of hardware and software in data collection, storage, analysis and reporting; the importance of data quality, entry, integrity and reliability as well as confidentiality and the use of security measures to protect electronic health records.



## COURSE SUMMARY

### COURSE DESCRIPTION

This course introduces the basic principles and mechanics of the electronic health record, data retrieval and storage, and healthcare computer systems. Topics include the use of hardware and software in data collection, storage, analysis and reporting, the importance of data quality, entry, integrity and reliability as well as confidentiality, and the use of security measures to protect electronic health records.

### MAJOR INSTRUCTIONAL AREAS

1. Data quality and security concepts
2. Electronic health records
3. Confidentiality and privacy of patient data
4. Ethics and law

### COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Explore the development and functionality of electronic health records and their benefits over paper medical records.
2. Summarize the legal and ethical issues involving electronic health records.
3. Fill electronic forms to create, document, and maintain patient information.
4. Identify and discuss the impact of computers in healthcare in all areas within a facility.
5. Examine the administrative and clinical uses of the electronic health record for healthcare providers.
6. Analyze the benefits of the electronic health record for clinical decision support, quality improvement, and patient education.
7. Interpret a document imaging and patient information database to study a disease.
8. Apply confidentiality and security measures to protect electronic health information.

## COURSE OUTLINE

## MODULE 1: INTRODUCTION TO ELECTRONIC HEALTH RECORDS

### COURSE LEARNING OBJECTIVES COVERED

- Explore the development and functionality of electronic health records and their benefits over paper medical records.
- Summarize the legal and ethical issues involving electronic health records.

### TOPICS COVERED

- Information Technology and Computer Literacy
- Hardware and Software
- Telecommunications and Networking
- Wireless Technology
- Medical Informatics
- Paper and Electronic Medical Records
- The American Recovery and Reinvestment Act (ARRA)
- The Health Insurance Portability and Accountability Act (HIPAA)
- Information Systems in Healthcare

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapters 1 and 2  | No         | 2.5 hr                   |
| <b>Lesson:</b> Study the lesson for this module.   | No         | 1.5 hr                   |
| <b>Short Answer:</b> Submit the short answer assignment titled “Computers in Healthcare.”                    | Yes        | 2 hr                     |
| <b>Research:</b> Submit the research assignment titled “Government Impact on Health Information Technology.” | Yes        | 3 hr                     |

Total Out-Of-Class Activities: 9 Hours

## MODULE 2: VIRTUAL PATIENT REGISTRATION AND TELEMEDICINE

### COURSE LEARNING OBJECTIVES COVERED

- Fill electronic forms to create, document, and maintain patient information.
- Identify and discuss the impact of computers in healthcare in all areas within a facility.
- Examine the administrative and clinical uses of the electronic health record for healthcare providers.

### TOPICS COVERED

- Administrative Application of Computers and Medical Office Administrative Software
- Scheduling, Accounting, and Insurance
- The Patient Protection and Affordable Care Act (2010)
- Remote Monitoring Devices
- Telewound and Telehome Care
- Telemedicine Application, the Telenurse, and Issues in Telemedicine
- Telemedicine in Pathology, Dermatology, Radiology, Cardiology, Neurology, and Psychiatry

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapters 3 and 4  | No         | 4.5 hr                   |
| <b>Reading:</b> ITT Tech Virtual Library> <ul style="list-style-type: none"> <li>• Basic Search&gt; Ethical Challenges in the Era Of Health Care Reform</li> <li>• Browse&gt; Browse by Format&gt; Books&gt; Books 24X7&gt; <i>Health IT JumpStart: The Best First Step Toward an IT Career in Health Information Technology</i>&gt; Chapter 13</li> </ul> | No         | 4.5 hr                   |
| <b>Lesson:</b> Study the lesson for this module.   | No         | 2 hr                     |
| <b>Quiz:</b> Prepare for Quiz 1.   | No         | 2 hr                     |
| <b>Lab 1:</b> Complete the lab titled “Completing UB-04 Medical Claims.”   | Yes        | N/A                      |
| <b>Lab 2:</b> Complete the lab titled “Registering a Patient.”   | Yes        | N/A                      |
| <b>Research:</b> Submit the research assignment titled “Uses of Telemedicine.”   | Yes        | 3.5 hr                   |
| <b>Quiz:</b> Take Quiz 1.  | Yes        | N/A                      |

Total Out-Of-Class Activities: 16.5 Hours

**MODULE 3: TECHNOLOGY IN PUBLIC HEALTH, RADIOLOGY, AND SURGERY****COURSE LEARNING OBJECTIVES COVERED**

- Identify and discuss the impact of computers in healthcare in all areas within a facility.
- Examine the administrative and clinical uses of the electronic health record for healthcare providers.

**TOPICS COVERED**

- Use of Computers in Studying Diseases
- Information Technology—Collection, Modeling, and Surveillance of Disease Agents
- Computer Modeling of Diseases
- X-Rays, Ultrasounds, and Digital Imaging Techniques
- Computer-Aided Detection, Picture Archiving, and Communications Systems
- Bloodless Surgery
- Computer-Assisted Surgery and Robotics
- Lasers in Surgery and Nanotechnology

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapters 5-7  | No         | 6 hr                     |
| <b>Reading:</b> <ul style="list-style-type: none"> <li>• National Nanotechnology Initiative: Nanotechnology 101 (<a href="http://www.nano.gov/nanotech-101/what">http://www.nano.gov/nanotech-101/what</a>)</li> <li>• Computational Modeling (<a href="http://www.nibib.nih.gov/science-education/science-topics/computational-modeling">http://www.nibib.nih.gov/science-education/science-topics/computational-modeling</a>)</li> </ul> | No         | 2 hr                     |

| MODULE LEARNING ACTIVITIES  | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|---|------------|--------------------------|
| <p><b>Reading:</b> ITT Tech Virtual Library&gt; Basic Search&gt; Browse&gt; Browse by Format&gt; Books&gt; Books24x7&gt; <i>Health IT JumpStart: The Best First Step Toward an IT Career in Health Information Technology</i>&gt; Chapter 12&gt;</p> <ul style="list-style-type: none"> <li>• Maternal and Infant Care System</li> <li>• Radiology Information Systems</li> <li>• Picture Archiving and Communications System</li> <li>• Prescription Labels</li> <li>• Patient Eligibility</li> <li>• Laboratory Systems</li> <li>• Disease Registries</li> <li>• Emergency Department Systems</li> <li>• Cardiology Systems</li> <li>• Clinical Decision Support Systems</li> </ul> | No         | 3 hr                     |
| <b>Lesson:</b> Study the lesson for this module.  | No         | 2.5 hr                   |
| <b>Lab 1:</b> Complete the lab titled “Scavenger Hunt Activity.”  | Yes        | N/A                      |
| <b>Lab 2:</b> Complete the lab titled “Chart Tracking Activity.”  | Yes        | N/A                      |
| <b>Short Answer:</b> Submit the short answer assignment titled “Technology in Public Health and Surgery.”   | Yes        | 2 hr                     |
| <b>Research:</b> Submit the research assignment titled “Trends in Digital Imaging.”   | Yes        | 3.5 hr                   |

Total Out-Of-Class Activities: 19 Hours

## MODULE 4: TECHNOLOGY IN PHARMACY, DENTISTRY, AND BIOTECHNOLOGY

### COURSE LEARNING OBJECTIVES COVERED

- Fill electronic forms to create, document, and maintain patient information.
- Identify and discuss the impact of computers in healthcare in all areas within a facility.
- Examine the administrative and clinical uses of the electronic health record for healthcare providers.

### TOPICS COVERED

- Biotechnology and The Human Genome Project
- Computer-Assisted Drug Trials and Drug Review
- The Computerized Pharmacy
- Telepharmacy and Teledentistry
- Impact of Information Technology on Pharmacy
- Computerized Instruments in Dentistry
- Diagnosis, Expert Systems, and Diagnostic Tools
- Lasers and Minimally Invasive Surgery in Dentistry

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapters 8 and 9  | No         | 4.5 hr                   |
| <b>Reading:</b> What is Biotechnology? ( <a href="http://www.bio.org/articles/what-biotechnology">http://www.bio.org/articles/what-biotechnology</a> )   | No         | 0.5 hr                   |
| <b>Reading:</b> ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> <i>Health IT JumpStart: The Best First Step Toward an IT Career in Health Information Technology</i> > Chapter 12> <ul style="list-style-type: none"> <li>• Third-Party Databases for Drugs</li> <li>• Third-Party Databases for Toxicology</li> <li>• Pharmacy Systems</li> </ul> | No         | 0.5 hr                   |
| <b>Lesson:</b> Study the lesson for this module.   | No         | 2 hr                     |
| <b>Quiz:</b> Prepare for Quiz 2.   | No         | 2 hr                     |
| <b>Lab:</b> Complete the lab titled “Dental Claim Form.”   | Yes        | N/A                      |

| MODULE LEARNING ACTIVITIES  | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|---|------------|--------------------------|
| <b>Short Answer:</b> Submit the short answer assignment titled “Technology in Healthcare, Dentistry, and Pharmacy.” | Yes        | 2 hr                     |
| <b>Research:</b> Submit the research assignment titled “Human Genome Project.”                                      | Yes        | 3 hr                     |
| <b>Quiz:</b> Take Quiz 2.   | Yes        | N/A                      |

Total Out-Of-Class Activities: 14.5 Hours



## MODULE 5: TECHNOLOGY IN HEALTH INFORMATION, PSYCHIATRY, AND REHABILITATION

### COURSE LEARNING OBJECTIVES COVERED

- Identify and discuss the impact of computers in healthcare in all areas within a facility.
- Examine the administrative and clinical uses of the electronic health record for healthcare providers.
- Analyze the benefits of the electronic health record for clinical decision support, quality improvement, and patient education.
- Interpret a document imaging and patient information database to study a disease.

### TOPICS COVERED

- Health Information on the Internet
- Health-Related Smartphones and Tablet Computer Apps
- Self-Help Software
- Computers and Psychiatry
- Computerized Medical Instruments and Devices
- Assistive and Prosthetic Devices
- Computerized Functional Electrical Stimulation Technology
- Computers in Rehabilitative Therapies

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapters 10 and 11  | No         | 5 hr                     |
| <b>Reading:</b> Evaluating Internet Health Information<br>( <a href="http://www.nlm.nih.gov/medlineplus/webeval/webeval_start.html">http://www.nlm.nih.gov/medlineplus/webeval/webeval_start.html</a> )  | No         | 1 hr                     |
| <b>Reading:</b> ITT Tech Virtual Library> Basic Search> Browse> Browse by Format> Books> Books24x7> <i>The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care</i> > <ul style="list-style-type: none"> <li>• Chapter 9 <ul style="list-style-type: none"> <li>○ Doctors and Email</li> <li>○ Doctors and Social Networking</li> </ul> </li> <li>• Chapter 11</li> </ul> | No         | 3.5 hr                   |

| MODULE LEARNING ACTIVITIES  | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|---|------------|--------------------------|
| <b>Lesson:</b> Study the lesson for this module.  | No         | 2 hr                     |
| <b>Lab 1:</b> Complete the lab titled “Visible Human Project.”  | Yes        | N/A                      |
| <b>Lab 2:</b> Complete the lab titled “Using a Medical Literature Database.”                              | Yes        | 1 hr                     |
| <b>Short Answer:</b> Submit the short answer assignment titled “Email and Virtual Reality in Healthcare.” | Yes        | 2 hr                     |

Total Out-Of-Class Activities: 14.5 Hours

## MODULE 6: SECURITY AND PRIVACY

### COURSE LEARNING OBJECTIVES COVERED

- Explore the development and functionality of electronic health records and their benefits over paper medical records.
- Summarize the legal and ethical issues involving electronic health records.
- Fill electronic forms to create, document, and maintain patient information.
- Identify and discuss the impact of computers in healthcare in all areas within a facility.
- Examine the administrative and clinical uses of the electronic health record for healthcare providers.
- Analyze the benefits of the electronic health record for clinical decision support, quality improvement, and patient education.
- Interpret a document imaging and patient information database to study a disease.
- Apply confidentiality and security measures to protect electronic health information.

### TOPICS COVERED

- Security and Privacy—An Overview
- Threats to Information Technology
- Privacy, Security, and Healthcare
- Privacy Databases
- Security Breaches

| MODULE LEARNING ACTIVITIES   | GRADE<br>D | OUT-OF-<br>CLASS<br>TIME |
|--|------------|--------------------------|
| <b>Reading:</b> Burke, L. & Weill, B., Chapter 12                  | No         | 2.5 hr                   |
| <b>Lesson:</b> Study the lesson for this module.                   | No         | 1 hr                     |
| <b>Final Exam:</b> Prepare for the final exam.                     | No         | 5 hr                     |
| <b>Lab:</b> Complete the lab titled “Creating a Timeline and PHR.” | Yes        | N/A                      |
| <b>Final Exam:</b> Take the final exam.                            | Yes        | N/A                      |

Total Out-Of-Class Activities: 8.5 Hours

### EVALUATION AND GRADING

## EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

| Category     | Weight |
|--------------|--------|
| Lab          | 35%    |
| Short Answer | 15%    |
| Research     | 20%    |
| Quiz         | 10%    |
| Final Exam   | 20%    |
| TOTAL        | 100%   |

## GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

| Grade         | Percentage |
|---------------|------------|
| A (4.0)<br>)  | 90–100%    |
| B+ (3.5)<br>) | 85–89%     |
| B (3.0)<br>)  | 80–84%     |
| C+ (2.5)<br>) | 75–79%     |
| C (2.0)<br>)  | 70–74%     |
| D+ (1.5)<br>) | 65–69%     |
| D (1.0)<br>)  | 60–64%     |
| F (0.0)<br>)  | <60%       |

## LEARNING MATERIALS AND REFERENCES

### REQUIRED RESOURCES

#### COMPLETE TEXTBOOK PACKAGE

Burke, L., & Weill, B. (2013). *Information technology for the health professions (4th ed.)*. Upper Saddle River, NJ: Prentice Hall.

#### OTHER ITEMS

Access to AHIMA Virtual Labs (provided by instructor)

### RECOMMENDED RESOURCES

- Professional Associations
  - American Association of Medical Assistants (<http://www.aama-ntl.org/>)
  - American Health Information Management Association (<http://www.ahima.org/>)
  - American Medical Informatics Association (<http://www.amia.org/>)
  - Certificate Commission for Health Information Technology (<http://www.cchit.org/>)
- ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)
  - Browse> Browse by Format> Books> Books24x7>
    - Amatayakul, M. (2012). *Process improvement with electronic health records: a stepwise approach to workflow and process management*. Boca Raton, FL: CRC Press.
    - Kudyba, S.P. *Healthcare informatics: improving efficiency and productivity (2010)*. Boca Raton, FL: CRC Press.
    - *HIPAA compliance manual (2009)*. Neenah, WI: J.J. Keller & Associates.
    - Scarlat, A. (2012). *Electronic health record: a systems analysis of the medications domain*. Boca Raton, FL: CRC Press.
    - Wager, K.A. (2009). *Health care information systems: a practical approach for health care management (2nd ed.)*. San Francisco, Ca: Jossey-Bass.
    - Williams, T. (2011). *Electronic health records for dummies*. Hoboken, NJ: Wiley Publishing.

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## INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as hands-on labs, lessons, and research. Your progress will be regularly assessed through a variety of assessment tools including lab, short answer, research, quiz, and final exam.

## OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “Course Outline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

**ACADEMIC INTEGRITY**

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

**INSTRUCTOR DETAILS**

|                 |  |
|-----------------|--|
| Instructor Name |  |
| Office Hours    |  |
| Contact Details |  |

*(End of Syllabus)*