AHE 233
Introduction to Health Informatics
Curriculum

This curriculum consists of a Course Syllabus,
11 lesson plans, assignments and exams

Course Syllabus/Overview

Developed by
NORTH SEATTLE COMMUNITY COLLEGE

Funded by the Seattle Community-Based Health Care Training Partnership Project

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Course Overview

This course will introduce Health Informatics including definitions, theory, technologies, workflow and expectations in the informatics field, tools, and professional organizations. As I have been a Clinician for over 20 years, and working in Information Technology for over 10 years with a wide range of experience in both IT and in the Healthcare Industry (ranging from Home Health to ICU/CCU, from Helpdesk to Clinical IT Specialist) I understand this first hand. Class material will involve discussions, computer lab, and guest speakers.


Recommended Textbook(s): I will suggest web sites, manuals, and books for research and class assignments.

Required Materials and Aids: CL cost

Course Outline:

| Week 1: Major Theories and Healthcare Informatics Literacy |
| Week 2: Databases |
| Week 3: Supporting Administrative and Clinical Decision Making |
| Week 4: Structure and Application of HIS |
| Week 5: Strategic Planning and Life Cycle of HIS |
| Week 6: Communication, Technology, and Education |
| Week 7: eHealth Trends and Research |
| Week 8: Impact of Informatics |
| Week 9: Technical and Professional Informatics Standards |
| Week 10: Accreditation and PHI |
| Week 11: Future and Directions of Informatics |
COURSE GRADING

As course instructor, I believe that my role is to create an exciting learning experience that will help you learn and achieve the outcome goals of this class, to clearly communicate my expectations, and to be responsive to individual learning styles and needs. It is my expectation that the student will assume responsibility for their learning by completing assignments, actively participating in class sessions and clearly communicating needs to me. You are responsible for attendance. Missed lecture and lab material may be obtained from your class members. Any behavior deemed by the instructor to be disruptive to the class may be cause for dismissal under the provisions of the Student Code of Conduct.

Upon successful completion of this course, you will be able to:

1. Define Health Information Systems and explain what the two main categories.
2. Explain Clinical Information Systems and Administrative Information Systems.
3. Identify the different reporting systems.
4. Define and identify differences in databases.
5. Define security profiles and administrative functions.
6. Explain the differences between Integrated Systems and Modular Systems.
7. Define Interfaces and explain the function of an interface.
8. Identify the differences between Home Health and Hospice Software, Maternal Infants, and Electronic Medical Records Practice Management for Physician Offices and Clinics.
9. List different functions of Imaging and Service Desk software.

There will be two examinations (a Mid Term and a Final), eleven weekly assignment (you will be able to either drop one assignment or do all eleven and earn extra credit), and one in class project that will involve weekly labs. This project is 200pts, 50 pts will be from class participation, 50 points from peer evaluation, and 100 points instructor evaluation. There is a weekly reading assignment at the end of this syllabus – please come to class prepared each week! Both Mid Term and Final will have questions based on YOUR READING!

Extra Credit will be available upon request from the instructor.

Your final grade will be calculated as follows:

<table>
<thead>
<tr>
<th>Weekly Assignments</th>
<th>100 points</th>
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<tbody>
<tr>
<td>Class Project:</td>
<td>200 points</td>
</tr>
<tr>
<td>Mid Term/ Final</td>
<td>100 points</td>
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</tbody>
</table>

Decimal grade | Letter grade equivalent
---|---
4.0 - 3.9 | A
3.8 - 3.5 | A-
3.4 - 3.2 | B+
3.1 - 2.9 | B
2.8 - 2.5 | B-
2.4 - 2.2 | C+
2.1 - 1.9 | C
1.8 - 1.5 | C-
1.4 - 1.2 | D+
1.1 - 0.9 | D
0.8 - 0.7 | D-

NOTE: The last day to change audit/credit status is Friday, November 16. If you have stopped attending class but have not officially withdrawn or changed to audit by that date, your grade will be 0.0.
CLASSROOM POLICIES

Guidelines for Student Conduct:
You are expected to comply with student conduct policy and procedures. Information on student responsibilities and rights is available at the following website: www.seattlecolleges.com/services.

Cell Phone Etiquette: To avoid disruption of class, please either turn off your cell phone or put it on silence/vibrate.

Academic Honesty: (plagiarism, exam conduct, etc.) Academic honesty is highly valued at NSCC. You must always submit work that represents your original words or ideas. If any words or ideas are used that do not represent your original words or ideas, please cite all relevant sources both in the text and in the references listing at the end of the paper.

Absence: If you anticipate being absent from class when you need to turn in an assignment, project, or take exams, you are STRONGLY encouraged to notify me in advance. Repeated absence may interfere with your work and result in a lower grade. Make-up examinations will not be given and you will need to discuss alternatives with me.

STUDENT SUPPORT SERVICES

Students are encouraged to seek campus support services when necessary to support their learning and academic progress. Refer to student handbook, brochures/flyers, or college website for information about: http://www.northseattle.edu/services/

- Educational Access Office (accommodations)
- Disability Accommodations
- Tutoring Services
- Library
- LOFT Writing Center
- Counseling
- Women’s Center
- Multicultural Services Office
- Wellness Center

Classroom Diversity Statement: Respect for diversity is a core value of NSCC. Our college community fosters an optimal learning climate and an environment of mutual respect. We, the college community, recognize individual differences. Therefore, we are responsible for the content and tone of our statements and are empathetic speakers and listeners.

American Disability Act: If you need course adaptations or accommodation because of a disability; if you have emergency information to share with your instructor; or if you need special arrangements in case the building must be evacuated; please make an appointment with your instruction as soon as possible.
READING ASSIGNMENTS

Week One – Chapter 1 and 2  
Week Two – Chapter 3  
Week Three – Chapter 4 and 5  
Week Four – Chapter 6 and 7  
Week Five – Chapter 8 and 9  
Week Six – Chapter 11 and 12  
Week Seven – Chapter 13 and 16  
Week Eight – Chapter 14  
Week Nine – Chapter 17 and 18  
Week Ten – Chapter 19 and 20  
Week Eleven – Chapter 22 and 23

WEEKLY ASSIGNMENTS

**Week 1:**  Draw a model of your definition of informatics in your discipline. Check out these Web sites for some examples:

A. [An Overview of Nursing Informatics](#)  
B. [A Mathematical Model of Communication (p. 2)](#)

OR

Select one of the models described in the chapter on change management. Discuss how it might be used to evaluate a clinical-information or communication-technology implementation from a recent or current practice setting. Consider the following questions:

A. Does the model include relevant concepts that are operating in the setting?  
B. Can relationships between the concepts be identified easily in the model?  
C. Could the model be used to structure an implementation evaluation by concretely identifying key elements of the change?

**Week 2:**  The [Combined Health Information Database](#) is a bibliographic database produced by health-related agencies of the federal government. This database provides titles, abstracts, and availability information for health information and health education resources. Explore how a health care consumer might find the answer to a simple health-related question. Does this database easily provide answers to simple queries? How might it be improved?

**Week 3:**  [Health Information Sites](#) Many health care organizations are now providing information to clinicians and consumers on their Web sites. Virtual Hospital is a popular health information site for clinicians and consumers. Under "What's New on the Virtual Hospital", could a database be developed that might make it easier to find new information for the users visiting this site? How might you structure a database of this information?

**Week 4:**  [Securing Health Care Data](#) - Increasingly, organizations are adopting ways to implement the Health Information Portability and Accountability Act of 1996 (HIPAA), especially in the areas of privacy and security. Review "Emergency Care" at and develop a list of important elements that might need to be considered as health care information goes online.
Week 5: e-veloping Data Integrity Policies - Imagine you have been asked to develop policies related to data integrity. What kinds of resources would you use to create a framework of policies? Describe how and where you might explore the Internet for resources related to data integrity.

Week 6: Online Learning Experiences - Imagine that you are thinking of enrolling in a completely online course in which you will not physically meet the other students or the teacher. Identify the benefits and barriers of this kind of learning experience. How would you determine whether this type of course is right for you? List one or two resources (online or print) that you might use.

Week 7: Barriers, Challenges, and Concerns for eHealth - The chapter concludes with a list of barriers, challenges, and concerns for eHealth. After assessing the definitions of eHealth and reviewing Web sites with a focus on eHealth, determine whether the list is complete. What would you add? Is there anything you would delete? What criteria did you use for your assessment?

Week 8: Organizational Differences of Health Care Organizations - Perform a Web search for examples of an integrated health network and a traditional health care organization. Can you tell the differences between these organizational structures from their Web sites? What are the discriminating features?

Week 9: Professional Code of Conduct - Review information related to the professional code of conduct posted at Web sites for several health care providers. Some examples of organizations with such Web sites include the American Medical Association (AMA), American Pharmaceutical Association (APA), and the American Nurses Association (ANA). What do these codes of conduct have in common, and how do they apply to health care informatics?

Week 10: Availability of Health Care Information - Complete a MEDLINE search on HIPAA. Complete a Web search on HIPAA. Focus your attention on the data integrity elements and privacy. Summarize the results of your searches in terms of focal area, breadth of information provided, and availability. Describe how the two resources provide different yet complementary sources of data.

Week 11: Educational Opportunities in Health Care Informatics - The following table identifies the various types and levels of education possible in health care informatics. After reviewing the table, search the Internet and find one or more programs for each cell in the table.

<table>
<thead>
<tr>
<th>Educational Programs in Health Care Computing</th>
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<tbody>
<tr>
<td>Level of Education</td>
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<tr>
<td>Post Doc</td>
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<tr>
<td>Doctorate</td>
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<tr>
<td>Masters</td>
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<tr>
<td>Certificate</td>
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<tr>
<td>Post-Masters</td>
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<tr>
<td>Post-Bac</td>
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<tr>
<td>Other</td>
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<tr>
<td>Baccalaureate (major or minor)</td>
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<tr>
<td>Associate Degree</td>
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</tbody>
</table>
Healthcare Informatics
Definition
Health Informatics
Medical Informatics
Clinical Informatics
Biomedical Informatics
Nursing Informatics
Public Health Informatics
Information Science

Major Theories Supporting Health Care Informatics
Systems Theory
Characteristics of Systems
Resistance to Change
Systems and the change process
Function vs. purpose
GIGO
Information Theory
Learning Theories
Behavioral Theories
Information Processing, or Cognitive Learning, Theories
Adult Learning Theories
Learning Styles

Change Theories
Planned Change
Diffusion of Innovation
Using Change Theories
Change Management

Understanding Databases
Database Models
Database Types
Anatomy of Database
Data views and Data Manipulation
Overview of Database Features
Relational and Transactional Databases

Overview of Healthcare Information Technologies
Modular
Integrated
Supporting Administrative Decision Making
  Overview of Administrative Decision Making and Decision Support
  Decision Support System
  Review of ERP – Finance, HR, Materials Management
  Review of Physician Practice Management and Scheduling
  Emerging Developments in Administrative Decision Support

Supporting Clinical Decision Making
  Decision Making in Clinical Care
  Background of Decision Making and Knowledge Representation
  Review data, info, knowledge – decision making
  Decision Making in Clinical Setting
  Opportunities for New Approaches
  Using Knowledge Discovery in Large Data Sets for Clinical Decision Support
  System Development
  Requirements for Future Development of Clinical Decision Support Systems

Overview of Healthcare Information Technologies
  Departments
  HIS
  CIS
  POC
  AIS
  Modular
  Integrated
  Interfaces

Applications for Health Care Information Systems
  Systems Overview
  What is a CIS?
  Data Handling
  Types of System Applications
    AIS, ERP, and Institution Wide Apps
    ADT
    CIS Modules
    Documentation Systems/Nursing Module
    Administrative/Scheduling
    Operations/Email-Intranet
  Information System Configuration

Healthcare Informatics Workflow
  Implementations CIS
    Defining Information Management
    Selection of Software and Hardware
  Upgrading CIS
  Support CIS
    Training
    E-Learning
    Project Management Informatics
The Life Cycle of a Healthcare Information System
- Strategic Information Plan
- Tactical Information Plan
- Principles of Project Management and Organization
- Methods of Selecting a Vendor Product
- Initial Search for Information
- System Selection Task Force
- Negotiation of the Contract
- Agreement on the Scope of the Project
- Finalization of Project Details
- Fast Track Design and Build Methods
- Implementing the Project
- Product Evaluation Methods
- Maintenance
- Support of Ongoing Product Development
- A Decision to Change the Product

Electronic Health Records/EMR
- The EMR
- The need for the EMR
- Historical Perspectives
- Functions and Features
- Costs and Benefits of the EMR
- eHealth, the EMR, and the Internet
- Achieving the Vision
- Factors, Forces, and Issues Affecting the Adoption of the EMR
- EMR Research

Technological Approaches to Communication
- A Framework for Following Technology Trends
- Static and Changing Roles of Technologies
  - VM, Pages, Fax, PDA
- The Internet – New Communication
  - Webinars
  - E – Learning
  - FTP
- Communications Integration
  - Linking Applications
  - XML\HTML

Technology and Distributed Education
- Societal Impetus to Use Technology in Education
- Access to Learning
- Role of the Teacher
- Uses of Technology
- Technology in the Classroom
- Tools for Teaching with Technology
  - Online Syllabus and Assignments
  - Communication Tools
- Technology in Distributed Education
- The World Wide Web as a Resource
Technology and Distributed Education (continued)
Process for Helping Faculty to Adopt Technology as an Education Strategy
Quality of Internet Based Distance Education
Issues of Technology and Education
Consumer Education

eHealth Trends and Technologies
The Impact of the Internet on Health Care Providers and Patients

Defining eHealth
Internet Computer Standards
eHealth's Emerging Sectors
The Impact of Informatics on the Sociocultural Environment of Health Care
The Implications of Information Technology for Research
Locating Research Information
The Internet and Health-Related Research
Analysis of Research Data
Statistical Packages
Electronic Dissemination of Research Results-Sharing Results with Others
Use of the Intent for Research
Pro and Con
Ethics of Online Research
Sources of information, Support, and Organizations for Informatics Research

Current Research in Health Care Informatics
The Impact of Health Care Informatics on the Organization

Relevance of Theories about Organizations to Health Care Informatics
Open Systems Theory
Definitions
Information Needs and Challenges in Today’s Health Care Environment
Informatics
Virtual Organizations
Integration
Advances in Health Care Informatics in the Clinical Area
Smart Phone/Patient Self-Scheduling
Changes in Professional Practice Due to Advances in Health Care Informatics
Changes in Management Roles Due to Advances in Health Care Informatics

Human Computer Interaction in Health Care Organizations
A framework for Human Computer Interaction in Health Care Contexts

Performing Usability Assessments

Technical Standards Used In Health Care Informatics

Standards Coordination and Promotion Activities
Professional Organizations - PSNI
Establishing International Standards

ISO Committees
Identifier Standards
Patient/Providers
Supply
Labels
General Communications Standards (Message Format)
  HL7
  Cobra
  P1157
  Medical Data Interchange Standard
Specific Communications Standards
  DICOM
Content and Structure Standards
Clinical Data Representation (Codes)
  ASC
  ICD-9

Standards for Software Applications

Telecommunications Standards
  Revisit LAN, WAN

Professional Health Care Informatics Standards

Ethics and Standards
  The People within a Health Care System
    Healthcare Professionals and Consumers
  The Content of a Health Care System
    Standard Languages
  The Context of the Health Care System
    Accreditation
  The Implications of Accreditation and Governmental Regulations for Health Care Informatics
  Accreditation and Certification
    JCAHO
    Role of Informatics Professional
Governmental Regulation
  DSHS
  US Dept of Health
Protection of Health Care Information
Dimensions of performance
  Access
  Integrity
  Availability
Transition from Paper to EMR
  Linking Records
  HIPAA
Legal and Policy Implications
  Legal Protection
  Ownership and Control of PHI
Career Opportunities

The Future of Healthcare Informatics
   Assumptions, Driving forces and Guiding Principles
      Specialty
      Science
      Professions
   Future Education Programs and Health Care Informatics
   Future Directions in Health Care Informatics
   Challenges in Futures Research
   Purpose of Futures Studies
   Approaches for Predicting
      Trend Analysis
      Content Analysis
   Trends Influencing Health Care Informatics
   Future Direction in Health Care Informatics
      Education
      Jobs and Roles
      Regulation
      DNA Matching
## Lesson Plan

<table>
<thead>
<tr>
<th>Week</th>
<th>Title of PowerPoint Presentation</th>
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<tbody>
<tr>
<td>Week 2</td>
<td>Understanding Databases</td>
</tr>
<tr>
<td>Week 4</td>
<td>Applications of Health Care Systems</td>
</tr>
<tr>
<td>Week 5</td>
<td>Strategic and Tactical Planning for Health Care Information</td>
</tr>
<tr>
<td>Week 9</td>
<td>Technical Standards Used in Health Care Informatics</td>
</tr>
</tbody>
</table>

For further Information, contact:

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E-mail: lryan@sccd.ctc.edu  
Web Site: [http://facweb.northseattle.edu/lryan/](http://facweb.northseattle.edu/lryan/)