INFO B535 Clinical Information Systems Course Syllabus

Department of BioHealth Informatics
Indiana University School of Informatics and Computing, Indianapolis
Fall 2020

Course information

Time: Asynchronous. You will review the module for each week, complete the readings and assignments, interact with your peers and instructor, and turn in your assignments prior to the date of the next module unless otherwise specified.

Location: This course will be conducted on the Canvas site.

Time Zone: All times referenced in this syllabus are given for US Eastern time zone. Those students in other locations should adjust their times to the US Eastern time zone.

Prerequisite: INFO-B 530 Foundation of Health Informatics

Instructor and LibreHealth EHR Assistant Information

Instructor: Cathy R. Fulton, DNP, RN, ANP-BC, FNP-BC

- Office Hours: Due to the coronavirus pandemic, this semester office hours are by Zoom on Mondays from 3-4 pm and Tuesdays from 11 am to 12 pm and by appointment
- Zoom: https://iu.zoom.us/j/7352154509 (When you enter the Zoom meeting, you will enter a waiting room until I let you into the Zoom meeting.)
- Office Phone: (317) 278-1841
- Email: catrsmit@iu.edu

I welcome you to contact me outside of class and student hours. You may email me, call my office, or contact the department and leave a message.

LibreHealth EHR Assistant: Shreya Goyal, email: shregoya@iupui.edu

Course Description

This asynchronous online course provides an introduction to clinical information systems. In this class, you will learn aspects of human computer interface and systems design; healthcare decision support and clinical guidelines; system selection; organizational issues in system integration; project management for information technology change; system evaluation; regulatory policies; impact of the Internet; economic impacts of e-health; distributed healthcare information technologies and future trends.

This course will give you the opportunity to learn about clinical information systems and to apply this knowledge to a practical situation that you might encounter after graduation. The course will replicate what you may find in your workplace once you graduate and are working. This is a graduate level course so you will be asked to apply what you learn to actual situations and communicate your responses in writing or, sometimes orally, as you would in a work situation. This will prepare you for future employment as a health informatics professional.

This course is sixteen weeks long. It will be delivered to you online using asynchronous written lectures and materials that are available every week through the modules section. There are no whole-class required in-person or Zoom meetings. You will need to remain current with the lectures, assignments and examinations as this is not a self-paced course. Each assignment will have a due date and time posted.

Respect for Diversity

It is my intent that students from all diverse backgrounds and perspectives be well served by this course and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups.

Textbook used for our class

There is a required textbook for our class and a suggested manual. The following is the required textbook: Hersh, W. R. & Hoyt, R. T. (2018). *Health informatics: Practical guide*. (7th Ed.). lulu.com.

The suggested manual, which is helpful for referencing, is
American Psychiatric Association. (2020). *Publication manual of the American Psychological Association*. (7th ed.). American Psychological Association.

There will be additional readings as suggested by the instructor.

Technology Requirements & Support

You will need reliable internet access and a PC or MAC with the latest web browser versions. In addition, you will need a broadband internet connect (DSL or faster), and because this course will include audio and video elements, you will need a computer system that can reliably playback media content. Below is a suggested list of recommended software to maximize your learning experience.

Latest versions of software/plugin/players:

- Adobe Reader

- Mozilla Firefox, Chrome, Safari (Mac only) or Edge (Windows only). Canvas supports the last two versions of every browser release. I highly recommend updating to the newest version of whatever browser you are
- Microsoft Office 2016 or Office 365 available for free at IUWare or IU AnyWare

Software

Free or low-cost software is available through Indiana University's license agreements. This software includes anti-virus software, graphic design suites, web development, citation management software, statistical analysis programs, and more.

Free downloads through IUware. IUware requires your Network ID and passphrase. Not all software is available online.

Technology Support

Contact the IT Support Center (Help is available 24/7) | Phone: 317-274-4357 |
Email: ithelp@iu.edu | Chat: ithelplive.iu.edu
Another great information source for all things IU is the Knowledge Base.

Help with Searching Databases

Mahasin Ameen is the School of Informatics and Computing Librarian. She is assigned to support the research needs of faculty, staff, and students of the school. Ms. Ameen is an excellent resource for locating important information including how to search databases, use Endnote, and format with APA.

Ms. Ameen is also available, with sufficient notice, to give you personalized assistance in learning to navigate scholarly information that will result in more applicable search results for your research needs. Contact her at 317-278-3195 or by email, mameen@iupui.edu

Help with Writing

There are two difference centers which can help with your writing skills.

- The University Writing Center (UWC) is a program available to all IUPUI students. You can work one-on-one with experienced readers and writers to improve your writing process and receive constructive feedback on their assignments. You may schedule sessions using their online scheduling system. You may have one appointment per day, 3 appointments per week.
- The English as a Second Language (ESL) Tutoring Center is a program available to all IUPUI students who need help with reading, understanding an assignment, giving a speech, or writing. You may schedule sessions using their online scheduling system. You may have one 30-45-minute sessions per student, per day.

Course Outcomes

Some of the specific outcomes I hope you will obtain in this course are listed below. Being a critical consumer of information about clinical information systems is important; all of these activities will help you become one, and it is my hope that you will use the skills in your career. Upon the successful completion of the course, you will be able to:

- Analyze the state of the science and current research issues related to (1) informatics applications for delivering and managing healthcare information in distributed environments and (2) clinical decision support/clinical guidelines.
- Characterize health/biomedical knowledge representation in system design, and human computer interface issues (hardware, software, end user).
- Assess organizational challenges in the selection, integration and implementation of clinical information systems and develop strategies to meet these challenges.
- Apply evaluation methodologies to support design, development and implementation of clinical information systems.
- Analyze the issues related to security of information in clinical information systems in light of current standards, federal regulatory requirements, and related organizational policies.
- Analyze the impact of information technology on delivery of clinical information and work redesign in the clinical enterprise.

Core Competencies

The Master's degree Health Informatics program is Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) accredited. For the purposes of CAHIIM Accreditation, students in the health informatics discipline should have working knowledge and competency of these foundational domains as they define and affect the practice of health informatics. Upon the successful completion of the course, you will be able to demonstrate the following competences:

1. Clinical Informatics Core Content Competencies

    a. History of Health informatics (e.g., evolution of health records, clinical information systems)
    b. Current and future challenges for health informatics
    c. Clinical information systems applications in health care
    d. Outcomes relevant to the clinical goals and quality measures
    e. Qualitative and quantitative methods for evaluating clinical information systems
    f. Legal and regulatory issues
    g. Ethics and professionalism

2. Leading and Managing Change Competencies

a. Governance (e.g., processes; responsibility versus authority)
b. Assessment of organizational culture and behavior
c. Clinical information systems applications in health care
d. Strategies for promoting adoption and effective use of clinical information systems

3. Effective Communications Competencies

a. Writing effectively for various audiences and goals
b. Developing effective communications program to support system implementation
c. Team productivity and effectiveness (e.g., articulating team goals, defining rules of operation, clarifying individual roles)
d. Effective presentations to groups

4. Project Management Competencies

a. Project management tools (non-software specific)
b. Balancing competing priorities
c. Scope and objectives management
d. Group management processes (e.g., meetings, consensus mapping, Delphi method)

Course Assignments

Assignments in the course break down into four groups. The percentage of your grade from each group is as follows:

1. Weekly Graded Tasks (The two lowest discussion scores will be dropped) 35%
2. LibreHealth EHR Scavenger Hunts 10%
3. Evaluation Paper 20%
4. Class Project 35%

Assignments are due at 11:59 pm EST. Weekly assignments and scavenger hunts are generally graded within a week and available for your review. Larger assignments, such as the evaluation paper and class project may take longer to grade.

Weekly Graded Tasks: Weekly graded tasks include regular discussions, a syllabus quiz, a plagiarism module, and a CTSI research module. Regular online discussions are an important part of this class because they can foster both a sense of community and connection between those involved and collaboration and higher order thinking skills that better prepare you for the type of work you'll find in your career.

LibreHealth EHR Scavenger Hunts: All class members will interact with LibreHealth EHR, an online clinical information system (i.e. an electronic health record or EHR). You will learn how to access and retrieve information from LibreHealth EHR via 4 scavenger hunts throughout the semester.

Evaluation Paper: This assignment is a comprehensive reflection of the content of the first 8 modules of the course. This assignment will require you to identify concrete and measurable metrics for the specific clinical information system identified in the assignment instructions, describe how you are going to collect the data for these metrics, and how you are going to analyze the data for the specific clinical information system.

Class Project: This assignment is designed to evaluate your ability to participate in a clinical information systems project development. The projects are real-life clinical information system analysis, development, implementation, or evaluation projects designed to maximize your learning opportunities. Several prominent local and national health care institutions and enterprises are offering projects for this purpose. For some of you, this may be a nice introduction to the workflow in the healthcare industry. In addition, some of these projects can evolve in your dissertation projects and/or internships if desired.

There are eleven parts to your class project:

1. In anticipation of the group project, it is mandatory for all students to complete a background skills assessment. This information will help gauge your skill sets and facilitate your assignment to one of the B535 Projects.
2. You will be given a list of available project around midterm time and you will sign up for your top choices among the available projects. I will ultimately assign you to a group project.
3. Since these projects are real-life systems under development and have intellectual property, I request that you handle all information obtained during this project and in class discussions as confidential and private. After meeting with your project team, your group as well as your project mentor will sign the confidentiality agreement and one team member will upload the agreement into Canvas.
4. After meeting with your team members for the first time, there will be a time for self-reflection with provided prompts so you will have time to reflect upon your interactions with others.
5. You will work with your mentor and group members to complete the project scope, including a refined project description (example: pathways, flowcharts, diagrams, etc.), the project outcomes, benchmarks for evaluation and the impact of the project. After completion, one team member will submit in Canvas. This discussion and document helps solidify the project scope for team members, mentor(s), and faculty.
6. Your group will work together to complete the project.
7. After completing the project, the team members will work together to develop the Project Presentation, which helps your team members, mentor(s), class mates, and instructor determine your key project results and recommendations reported in your presentation. You will share your presentation with the class.
8. Individually, you will provide feedback on the other groups' presentations.
9. Everyone in your group will contribute to writing the Executive Summary. (In the business world, an executive summary contains the most important parts of your project and is read by a decision maker who will have the responsibility of deciding on

some issue(s) related to the report. Therefore, it is important that you know how to write an Executive Summary before you graduate and get your first job.) One group member will then submit this Summary in Canvas.

10. Reflect on how you functioned as a group member in order to change and grow. By practicing self-reflection, you can better integrate learning and approach work with an improved state of awareness and confidence.
11. Complete your own and your group members' evaluations and submit to Canvas as feedback on group work will help to improve how you function in groups not only at the University, but also when you have group projects at work.

You will receive instruction in how to successfully complete each of these parts before the assignment date.

Grading Scale:

A+	97 – 100	Outstanding achievement, given at the instructor's discretion
A	93 – 96.99	Excellent achievement
A–	90 – 92.99	Very good work
B+	87 – 89.99	Good work
B	83 – 86.99	Marginal work
B–	80 – 82.99	Very marginal work
C+	77 – 79.99	Unacceptable work (Core course must be repeated)
C	73 – 76.99	Unacceptable work (Core course must be repeated)
C–	70 – 72.99	Unacceptable work (Elective or core course must be repeated)
D+	67 – 69.99	Unacceptable work (Elective or core course must be repeated)
D	63 – 66.99	Unacceptable work (Elective or core course must be repeated)
D–	60 – 62.99	Unacceptable work (Elective or core course must be repeated)
F	Below 60	Unacceptable work (Elective or core course must be repeated)

Course Structure

Modules with their topics and start dates:

Module 0-1 – Aug. 24

- Topic: Class introduction and History and Trends in Clinical Information Systems
- Assignment: Introduce yourself to the class; How to Recognize Plagiarism Certificate; Wednesday Discussion; Friday Discussion Response

Module 2 – Aug. 31

- Topic: Patient Care Systems
- Assignment: Skills Assessment Survey; Syllabus Review; Wednesday Discussion; Friday Discussion Response

Module 3 – Sep. 7

- Topic: Clinical Decision Support Systems Integrating Clinical Guidelines

- Assignment: Wednesday Discussion; Friday Discussion Response

Module 4 – Sep. 14

- Topic: Integrated Medical/Nursing Terminologies, Care maps, and Critical Pathways
- Assignment: Wednesday Discussion; Friday Discussion Response

Module 5 – Sep.21

- Topic: System Design and Human Computer Interaction
- Assignment: EHR Scavenger Hunt #1; Wednesday Discussion; Friday Discussion Response

Module 6 – Sep. 28

- Topic: Organizational Change and Project Management
- Assignment: EHR Scavenger Hunt #1; Wednesday Discussion; Friday Discussion Response

Module 7 – Oct. 5

- Topic: Clinical System Integration
- Assignment: Wednesday Discussion; Friday Discussion Response

Module 8 – Oct. 12

- Topic: Health Information Exchange
- Assignment: Wednesday Health Information Exchange Case Study Group Response; Friday Group Study Discussion Response

Module 9 – Oct. 19

- Topic: Evaluation of Clinical Information Systems
- Assignment: Confidentiality Form Submission; Self-Reflection; EHR Scavenger Hunt #3; Evaluation Paper due 10/28

Module 10 – Oct. 26

- Topic: Integration of Interdisciplinary/International Standards
- Assignment: Project Scope; Wednesday Discussion; Friday Discussion Response

Module 11 – Nov. 2

- Topic: Security in Clinical Information Systems
- Assignment: Wednesday Discussion; Friday Discussion Response

Module 12 – Nov. 9

- Topic: Health Policies Related to Clinical Information Systems
- Assignment: Wednesday Discussion; Friday Discussion Response

Module 13 – Nov. 16

- Topic: Economic Impacts of Health Information Technologies and E-health
- Assignment: EHR Scavenger Hunt #3; Wednesday Discussion; Friday Discussion Response

Module 14 – Nov. 30

- Topic: Social and Ethical Issues
- Assignment: Wednesday Discussion; Friday Discussion Response

Module 15 – Dec. 7

- Topic: Class Project
- Assignment: Project Presentation Uploaded for Peer Feedback

Module 16 – Dec. 14

- Topic: Class Project
- Assignment: Self Reflection: Self and Peer Project Evaluations; Executive Summary Submission; Project Mentor Evaluations

IUPUI Campus Policies

IUPUI's policies ensure that everyone follows university and campus regulations and best practices. This page covers the university policies most relevant to you as a student.

Student Conduct

The Office of Student Conduct supports the educational mission of the university by upholding the Indiana University Code of Student Rights, Responsibilities, and Conduct. The IUPUI disciplinary process is a fair and informal educational process designed to promote a safe educational environment and to develop students who are productive members of both the local and global communities. The phone number for the Office of Student Conduct is (317) 274-4431.

Adaptive Education Services (AES)

AES coordinates and provides support services and academic accommodations for students with disabilities, ensuring that students with documented disabilities have equal opportunities to pursue the college degree of their choice. In addition to helping students, AES provides processors, instructors, and university staff with expert advice and technical assistance as they develop meaningful and effective accommodations for students with disabilities. The phone number for AES is (317) 274-3241.

Incomplete:

An Incomplete (I) grade can be given only if a substantial portion of your coursework has been completed at passing quality and holding you to previously established assignment time limits would result in unjust hardship to you. All unfinished work must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year. Refer to Student Central to read the policy concerning requesting and changing an Incomplete grade .

Course Policies

Time Commitment Expectations

Generally, for every one graduate credit hour in which you enroll, you should expect to spend approximately 2-3 hours outside of class time studying. Since this is a fully online class and we are not meeting in real time, you should expect to spend approximately 9-12 hours each week working on this course. Note that the workload will increase before the evaluation paper and the class project are due.

A graduate course is really the equivalent of a part-time job. Please plan accordingly, pace yourself, and front-load your workflow.

Late Work Policy

This is an online class, but **not self-paced.** You must turn in your weekly assignments by the due date and time to remain a student in good standing.

Given the current situation, if you find yourself unable to complete an assignment by the due date because of extenuating circumstances, please let me know. Knowing that life happens to everyone, the two lowest weekly discussion scores will automatically be dropped for everyone.

If circumstances make you miss **more than** 2 weekly assignments during the semester, you may be overextended. I ask that you talk with me to discuss your options. Please don't wait until you've missed turning in assignments to talk with me. Missing more than 2 weekly assignments without reasonable extenuating circumstances (i.e. significant illness, injury, or a death in the immediate family) will reduce your grade.