Clinical Information Systems

Department of BioHealth Informatics
Indiana University School of Informatics and Computing, Indianapolis
Fall 2014

Section No.: 25678 (3 credit hours)
Time: Online
Location: Online
First Class: Aug 25, 2014
Website: https://iu.instructure.com/courses/1373426

Instructor: Josette Jones, RN, PhD, Associate Professor
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TA: Vamsi Krishna, Kommineni, John Kiran Babu, Lingam
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Prerequisites: None

COURSE DESCRIPTION
This course provides an introduction to clinical information systems. Clinical information systems include: 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.

Required Text(s):
Title: Biomedical Informatics: Computer Applications in HealthCare and Biomedicine.
Author(s): Shortliffe, E. H. and Cimino J. J
Edition: 3
Publisher: Springer
ISBN: 0387289860
Available at Amazon.com: http://www.amazon.com/Biomedical-Informatics-Computer-Applications-Biomedicine/dp/0387289860/ref=sr_1_1?ie=UTF8&qid=1374690409&sr=8-1&keywords=Biomedical+Informatics%3A+Computer+Applications+in+HealthCare+and+Biomedicine

Additional readings as suggested by the instructor.
Additional Texts: (if required)
  *Edition: 1*  
  *Publisher: Springer*  
  *ISBN: 0387955380*

*Enrico Coiera (2003). *Guide to Health Informatics*  
  *Edition: 2*  
  *Publisher: Oxford University Press*  
  *ISBN: 0340764252*

**Course Outcomes:**
*Upon the successful completion of the course, the student will be able to:*

1. 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.

2. Characterize nursing knowledge representation in system design, and human computer interface issues (hardware, software, end user).

3. Assess organizational challenges in the selection, integration and implementation of clinical information systems and develop strategies to meet these challenges.

4. Apply evaluation methodologies to support design, development and implementation of clinical information systems.

5. Analyze the issues related to security of information in clinical information systems in light of current standards, Federal regulatory requirements, and related organizational policies.

6. Analyze the impact of information technology on delivery of clinical information and work redesign in the clinical enterprise.

**Core Competencies:**
The core competencies of this course include the following:

1. History and Trends in Clinical Information Systems
2. Patient Care Systems and Patient Monitoring
4. Integrated Medical/Nursing Terminologies, Care Maps and Critical Pathways
5. System Design and Human Computer Interaction
6. Organizational Change and Project Management
7. Clinical Information System Integration
8. Health Information Exchange – Planning and Decision-making
9. Clinical Information System Evaluation

10. Integration of Interdisciplinary/International Standards

11. Security in Clinical Information Systems

12. Health Policies Related to Clinical Information Systems

13. Economic Impacts of Healthcare Information Technologies and E-health

14. Social and Ethical Issues

EXPECTATIONS, GUIDELINES, AND POLICIES

Attendance:
Class attendance is required for classroom-based courses. It entails being present and attentive for the entire class period. Attendance shall be taken in every class. If you do not sign the attendance sheet while in class, you shall be marked absent. Signing the attendance sheet for another student is prohibited. The instructor is required to submit to the Registrar a record of student attendance, and action shall be taken if the record conveys a trend of absenteeism. Illness or a death in the immediate family is usually the only acceptable excuse for absence from class. Absences must be explained to the satisfaction of the instructor, who will decide whether omitted work may be made up. To protect your privacy, doctor’s excuses should exclude the nature of the condition and focus instead on how the condition affects on your coursework. Missing class reduces your grade through the following grade reduction policy: You are allowed two excused or unexcused absences. Regardless of the reason, a third absence results in a 5% reduction in your final grade and a fourth absence results in a 10% reduction. Further absences result in an F in the course. Missing class may also reduce your grade by eliminating opportunities for class participation.

Incomplete:
The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established 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. http://registrar.iupui.edu/incomp.html

Deliverables:
You are responsible for completing each deliverable (e.g., assignment, quiz) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through OnCourse. Should you miss a class, you are still responsible for completing the deliverable and for finding out what was covered in class, including any new or modified deliverable. In fairness to the instructor and students who completed their work on time, a grade on a deliverable shall be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

Date for each class meeting:
• Specific pre-class readings
• Specific subject matter/topics covered
• Goals and objectives of each class period

Grading Information:

Learning Activities Percentage of Grade

<table>
<thead>
<tr>
<th>Learning Activities</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Contribution to online threaded discussion</td>
<td>35%</td>
</tr>
<tr>
<td>Clinical Information System Evaluation paper</td>
<td>20%</td>
</tr>
<tr>
<td>Staged course project (in collaboration with health care industry)</td>
<td>45%</td>
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*Contribute: Responsive and knowledgeable of required online threaded discussion

*Examples of Course project:

- Propose a computer interface solution to meet the needs of a diverse population
- Design a project management plan to address the key issues in one aspect of an information system development
- Provide a solution for an enterprise required to meet a new federal mandate for information security.

*Note: the course project will be executed in collaboration with health care institutions and as thus may require a few synchronous meetings with peers and the institution.

Principles of Graduate and Professional Learning (PGPL)

**Evaluation Forms:** Students should review all grading forms that will be used by the instructor to grade projects, presentations, papers, and other assignments.

If students want to see their grades at any time during the semester, they should contact the Instructor by phone or email.

**Score: Criteria to Evaluate Threaded Discussions.**

Student is scored on a scale of 1-4 (see table below) on each of the following attributes:

- **References:** the degree to which required reading are included and the way references are used in the student’s postings.
- **Level of cognition:** the degree to which the student’s postings represent basic knowledge recall, comprehension, application or higher levels of cognition such as analysis, evaluation or synthesis from the readings/discussion.
- **Answer development and logic:** the degree to which the student’s postings logically address and develop the questions posed in the assignment.
- **Respect and level of peer interaction:** the degree to which the student’s postings reflect respect for others and the extent to which the student extends or generates higher levels of cognition among their peers.

The average of the four attribute scores is considered the final score for each posting assignment. If the student posts beyond the due date, 10% or 0.4 points are deducted from the student’s final score, for each calendar day the student is late unless the student contacts the instructor prior to or within 24 hours of the due date and receives a waiver of the late penalty.

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- **References** demonstrate completion of all reading assignments and postings demonstrate student is applying referenced information; student adds additional referenced information and/or resources.
- **Level of cognition:** Demonstrates analysis, synthesis and/or evaluation levels of cognition.
by analyzing relationships or principles, creating new ideas or recognizing patterns, and/or being able to present and defend opinions by making judgments about knowledge gained with appropriate and referenced defense of position.

- **Answer development and logic:** Postings are well-developed and logically reasoned.
- **Respect and level of peer interaction:** Respectfully encourages analytical and/or synthesis, and/or evaluative type discussions among peers.

### 3
- **References** demonstrate completion of all reading assignments and postings demonstrate student is applying referenced information.
- **Level of cognition:** Demonstrates applied level of cognition by applying acquired knowledge, facts, techniques, or rules in a different way to solve practice, research, or educational problems.
- **Answer development and logic:** Postings are well-developed; logic may not be clear.
- **Respect and level of peer interaction:** Respectfully encourages applied level of discussions among peers.

### 2
- **References** demonstrate completion of all reading assignments and postings demonstrate student is primarily summarizing referenced information.
- **Level of cognition:** Demonstrates comprehension level of cognition by primarily organizing, comparing/contrasting, translating, and/or interpreting course concepts and main ideas.
- **Answer development and logic:** Postings are not fully developed; logic may not be clear.
- **Respect and level of peer interaction:** Respectfully encourages knowledge recall and/or comprehension level of discussions among peers.

### 1
- **References** demonstrate only partial completion of reading assignments and postings demonstrate student is primarily summarizing referenced information.
- **Level of cognition:** Demonstrates basic knowledge level of cognition by primarily summarizing and/or restating course concepts and main ideas.
- **Answer development and logic:** Postings reflect minimal effort in answer development or logic.
- **Respect and level of peer interaction:** Not respectful of others and/or feedback to peers is minimal and primarily for the purpose of social interaction and/or acknowledgement of peer posting ideas.

### 0
- Assignment not completed

**Grading Scale:**

- **A+** 97 – 100 Outstanding achievement, given at the instructor’s discretion
- **A** 93 – 100 Excellent achievement
- **A−** 90 – 092.99 Very good work
- **B+** 87 – 089.99 Good work
- **B** 83 – 086.99 Marginal work
- **B−** 80 – 082.99 Very marginal work
- **C+** 77 – 079.99 Unacceptable work (Core course must be repeated)
- **C** 73 – 076.99 Unacceptable work (Core course must be repeated)
- **C−** 70 – 072.99 Unacceptable work (Elective or core course must be repeated)
- **D+** 67 – 069.99 Unacceptable work (Elective or core course must be repeated)
- **D** 63 – 066.99 Unacceptable work (Elective or core course must be repeated)
- **D−** 60 – 062.99 Unacceptable work (Elective or core course must be repeated)
- **F** Below 60 Unacceptable work (Elective or core course must be repeated)

**MISSION STATEMENT**

The Mission of IUPUI is to provide for its constituents excellence in

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• Teaching and Learning;
• Research, Scholarship, and Creative Activity; and
• Civic Engagement.
With each of these core activities characterized by
• Collaboration within and across disciplines and with the community;
• A commitment to ensuring diversity; and
• Pursuit of best practices.
IUPUI’s mission is derived from and aligned with the principal components—Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices—of Indiana University’s Strategic Directions Charter.

STATEMENT OF VALUES
IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning. IUPUI values the opportunities afforded by its location in Indiana’s capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community, both to provide educational programs and patient care and to apply learning to community needs through service. As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of its students, faculty, and staff and to continuous improvement of its programs and services.

CODE OF CONDUCT
All students should aspire to the highest standards of academic integrity. Using another student’s work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.
All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct and in particular the section on academic misconduct listed below. Refer to The Code > Responsibilities > Academic Misconduct at http://www.indiana.edu/~code/. All students must also successfully complete the Indiana University Department of Education “How to Recognize Plagiarism” Tutorial and Test. https://www.indiana.edu/~istd. You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else’s words. To detect plagiarism instructors apply a range of methods, including Turnitin.com. http://www.ulib.iupui.edu/libinfo/turnitin

Academic Misconduct:
1. Cheating: Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.
   a. A student must not use external assistance on any “in-class” or “take-home” examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.
   b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advanced authorization from the instructor to whom the work is being submitted.
   c. A student must not use materials from a commercial term paper company, files of papers prepared by other persons, or submit documents found on the Internet.
   d. A student must not collaborate with other persons on a particular project and submit a copy of a written
report that is represented explicitly or implicitly as the student’s individual work.
e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on
fieldwork.
f. A student must not steal examinations or other course materials, including but not limited to, physical
copies and photographic or electronic images.
g. A student must not submit substantial portions of the same academic work for credit or honors more than
once without permission of the instructor or program to whom the work is being submitted.
h. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a
returned exam or assignment for credit.
2. Fabrication: A student must not falsify or invent any information or data in an academic exercise
including, but not limited to, records or reports, laboratory results, and citation to the sources of information.
3. Plagiarism: Plagiarism is defined as presenting someone else’s work, including the work of other
students, as one’s own. Any ideas or materials taken from another source for either written or oral use must
be fully acknowledged, unless the information is common knowledge. What is considered “common
knowledge” may differ from course to course.
a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another
person without acknowledgment.
b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
1. directly quoting another person’s actual words, whether oral or written;
2. using another person’s ideas, opinions, or theories;
3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
4. borrowing facts, statistics, or illustrative material; or
5. offering materials assembled or collected by others in the form of projects or collections without
acknowledgment
4. Interference: A student must not steal, change, destroy, or impede another student’s work, nor should
the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student’s grade or
the evaluation of academic performance. Impeding another student’s work includes, but is not limited to, the
theft, defacement, or mutilation of resources so as to deprive others of the information they contain.
5. Violation of Course Rules: A student must not violate course rules established by a department, the
course syllabus, verbal or written instructions, or the course materials that are rationally related to the
content of the course or to the enhancement of the learning process in the course.
6. Facilitating Academic Dishonesty: A student must not intentionally or knowingly help or attempt to
help another student to commit an act of academic misconduct, nor allow another student to use his or her
work or resources to commit an act of misconduct.

OTHER POLICIES

1. Right to revise: The instructor reserves the right to make changes to this syllabus as necessary and, in
such an event, will notify students of the changes immediately.
2. IUPUI course policies: A number of campus policies governing IUPUI courses may be found at the
following link: http://registrar.iupui.edu/course_policies.html
3. Classroom civility: To maintain an effective and inclusive learning environment, it is important to be an
attentive and respectful participant in lectures, discussions, group work, and other classroom exercises.
Thus, unnecessary disruptions should be avoided, such as ringing cell phones engagement in private
conversations and other unrelated activities. Texting, surfing the Internet, and posting to Facebook or
Twitter during class are generally not permitted. IUPUI nurtures and promotes “a campus climate that seeks,
values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus
community members to feel welcomed, supported, included, and valued” (IUPUI Strategic Initiative 9).
IUPUI prohibits “discrimination against anyone for reasons of race, color, religion, national origin, sex,
sexual orientation, marital status, age, disability, or [veteran] status” (Office of Equal Opportunity).
Profanity or derogatory comments about the instructor, fellow students, invited speakers or other classroom
visitors, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.

4. **Bringing children to class:** To ensure an effective learning environment, children are not permitted to attend class with their parents, guardians, or childcare providers.

5. **Disabilities Policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to reasonable accommodations. Please notify the instructor during the first week of class of accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). Visit [http://aes.iupui.edu](http://aes.iupui.edu) for more information.

6. **Administrative Withdrawal:** A basic requirement of this course is that students participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, it is the student’s responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal.

8. **Course Evaluation Policy:** Course evaluations provide vital information for improving the quality of courses and programs. Students are required to complete one course and instructor evaluation for each section in which they are enrolled at the School of Informatics and Computing. This requirement has three exceptions: (a) The student has withdrawn from the course; (b) only one student is enrolled in the section (in which case anonymity is impossible); and (c) the section is a laboratory that must be taken with a course having a different section number. Course evaluations are completed at [https://soic.iupui.edu/app/course-eval/](https://soic.iupui.edu/app/course-eval/). Course evaluations are open from the eleventh week. Course evaluations are anonymous, which means that no one can view the name of the student completing the evaluation. In addition, no one can view the evaluation itself until after the instructor has submitted the final grades for the course. In small sections, demographic information should be left blank, if it could be used to identify the student. A course evaluation must close before the grade for that course can be released. To ensure students have had ample opportunity to complete the evaluation, an uncompleted course evaluation could delay the release of the grade for up to a week.

11. **Communication:** The instructor should respond to emails within 48 hours, excluding weekends and holidays, and announce periods of extended absence in advance. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings.

12. **Email:** Indiana University uses your IU email account as an official means of communication, and students should check it daily for pertinent information. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.

13. **Emergency Preparedness:** Safety on campus is everyone’s responsibility. Know what to do in an emergency so that you can protect yourself and others. For specific information, visit the emergency management website. [http://protect.iu.edu/emergency](http://protect.iu.edu/emergency)