INSTRUCTIONS FOR COMPLETION OF THE UAMS GRADUATE SCHOOL COURSE APPROVAL FORM

1. Please save this PDF to your computer for editing.

2. The form has been designed with fields for your responses, and these are indicated in blue and gray shading. Please complete all fields. Use the "tab" key to move between fields. A 'beep' will sound if you attempt to enter a response that contains more characters than is permitted. IF YOU NEED HELP IN ANY OF THE FIELDS, PRESS THE F1 KEY AND A HELP WINDOW WILL OPEN.

3. Print the document, and then obtain the appropriate signatures before submitting the form to the Graduate Office.

COURSE APPROVAL FORM, Graduate School
University of Arkansas for Medical Sciences

This form and attached materials are due in the Graduate School Office on the first Monday of the month. All forms will be submitted to the UAMS Graduate Council Curriculum Committee for review and approval prior to consideration by the Graduate Council.

This form is not required for minor stylistic or editorial corrections to the title or course descriptions. These may be made when revising the catalog copy.

1. **Program:** Department of Biomedical Informatics (*Department*) | B | I | O | M | | | | | (*Alpha (Department) Code*)

2. **Action proposed** (indicate one or more items): Effective term: Fall 2017

- [X] Add course
- [ ] Eliminate course (No outline needed)
- [ ] Change title
- [ ] Change credit hours from: _____ to _____
- [ ] Change course number from: _____ to _____
- [ ] Change description

3. **Course ID, title and description:**

B	I	O	M						Health Information Sys
prefix				number					title (20 characters)

Health Information Systems
catalog name (40 characters)

Scheduled offering: [X] Fall [X] Spring [ ] Summer [ ] On demand

To cross list a course, use the Course Cross Listing Form.

Describe the course in sentence form using 50 words or less **as it is to appear in the catalog**. List prerequisites, co-requisites and possible off-site instructional opportunities or requirements.

This graduate course covers information systems used in healthcare. Topics focus on system functionality required to support care in inpatient and outpatient settings and associated data and workflows.

4. **Justification:**

Justify this change in terms of course needs or curriculum improvement. State the effect of this change on any degree programs. Identify the courses to be eliminated, if any, if this course is approved. (Course Approval Forms must also be submitted for these courses) Identify any existing course or courses that would extensively overlap or be duplicated if the proposed curricular change occurs. Provide statements of concurrence with the change from the chairperson(s) and dean(s) of the programs/areas offering the affected courses.

There will be no change to current degree plans.

SYLLABUS

COURSE NUMBER: BIOM _____

COURSE TITLE: Health Information Systems

COURSE DESCRIPTION:

This graduate course covers information systems used in healthcare. Topics focus on system functionality required to support care in inpatient and outpatient settings and associated data and workflows.

PRE-REQUISITES: none

GENERAL INFORMATION:

CREDITS: 1

SEMESTER: Fall, Spring

LOCATION: Campus and Online (hybrid)

FACULTY: Meredith Zozus

SPECIAL ASSISTANCE: Students who believe they may need accommodations in this class based on mental or physical impairments must contact the Students with a disability that need accommodations should contact the Associate Dean for Academic Affairs at (501) 686-5730 to schedule an appointment to discuss your needs. Please make arrangements as soon as possible so accommodations can be made in a timely manner.

COURSE OBJECTIVES:

Upon successful completion of this course, the student is able to:

1. Describe the evolution of health information systems in the United States.
2. Discuss meaningful use of health information technology, the Health Information Technology for Economic and Clinical Health (HITECH) Act, and the Office of the National Coordinator (ONC) for Health IT in the context of their impact in the recent evolution of health information systems and the health IT market.
3. Describe common functionality in Electronic Health Record (EHR) systems.
4. Compare and contrast health information systems used in primary care with those used in hospitals.

5. Describe five types of information systems used in healthcare today and their uses.
6. Draw a context diagram showing necessary connectivity between systems in healthcare.
7. Describe the requirements of the three stages of meaningful use
8. Describe three models for information exchange between health information systems.

MAJOR TOPICS:

History of health information systems in the United States
Clinical documentation
Meaningful Use
Practice management systems (office-based care settings)
Patient portals and Personal health records
HL7 EHR Functional Model and EHR functionality
EHRs including clinical decision support and physician order entry
Local lab system / Lab Information Systems
Picture Archiving and Communication Systems (PACS)
Pharmacy Information System
Patient monitoring systems
Telemedicine
Interoperability
Health Information Exchanges (HIEs)

ASSIGNMENTS:

Listed below for each week.

Week 1: History of health information systems in the U.S. through Meaningful Use

Assignment: (1) Create a graphic timeline depicting the evolution of health information systems in the United States. Share your work and constructively comment on the work of two or more students. (2) In one page or less, discuss meaningful use of health information technology, the Health Information Technology for Economic and Clinical Health (HITECH) Act, and the Office of the National Coordinator (ONC) for Health IT in the context of their impact in the recent evolution of health information systems and the health IT market. Share your work and constructively comment on the work of two or more students.

Reading: Shortliffe and Cimino Chapters 13 and 14; Collen Chapter

Quiz: Questions based on the week's content

Week 2: Basics of Clinical Documentation

Assignment: Compare and contrast the legal record, documentation to support coding

and billing, and the Electronic Health Record.

Reading: Assigned by instructor

Quiz: Questions based on the week's content

Week 3: Practice Management Systems and system integration in medical office-based settings

Assignment: Create a context diagram showing information flow between major systems used in medical offices.

Reading: From the primary literature

Quiz: Questions based on the week's content

Week 4: Patient Portals and Personal Health Records (PHRs)

Assignment: Create an information model for the data contained in most Patient Portals. Share your work and constructively comment on the work of two or more students.

Reading: Shortliffe and Cimino Chapter 17

Quiz: Questions based on the week's content

Week 5: Electronic Health Record (EHR) functionality

Assignment: Create an infographic depicting the major types of functionality of EHR systems. Share your work and constructively comment on the work of two or more students.

Reading: Health Level Seven (HL7) EHR Functional Model

Quiz: Questions based on the week's content

Week 6: Clinical Decision Support (CDS), Computer Physician Order Entry (CPOE) and ePrescribing in EHR systems

Assignment: Draw a UML activity diagram and state diagram for either an order, a CDS alert, or an ePrescription depicting permitted workflow and states.

Reading: Shortliffe and Cimino Chapters 12, 13 and 22

Quiz: Questions based on the week's content

Week 7: Laboratory Information Systems

Assignment: Compare and contrast the information flow between a LIS and an EHR in a hospital and an office-based setting. Describe how the information flow differs if the lab is local versus an off-site external organization. How might the situation be complicated if the healthcare facility uses multiple labs for the same tests. Describe a strategy and outline an associated plan to ameliorate the potential problems. Share your work and constructively comment on the work of two or more students.

Reading: From the primary literature

Quiz: Questions based on the week's content

Week 8: Picture Archiving and Communication Systems (PACS)

Assignment: Describe the challenges for a health system that refers out for CT and MRI but performs x-rays on site. Outline a strategy and tactical plan to assure that physicians have electronic access to high quality images from within their EHR. Share your work and constructively comment on the work of two or more students.

Reading: Shortliffe and Cimino Chapter 20

Quiz: Questions based on the week's content

Week 9: Pharmacy Information Systems

Assignment: Describe the information sources used for Medication Reconciliation in a large integrated healthcare system. Include all pertinent information systems as well as external data sources. Share your work and constructively comment on the work of two or more students.

Reading: Roadmap for Pharmacy Health Information Technology Integration in U.S. Healthcare and the 2014-2017 update. (http://www.pharmacyhit.org)

Quiz: Questions based on the week's content

Week 10: Patient Monitoring Systems

Assignment: Identify and list the patient monitoring systems in Intensive Care Units. Describe the function of each and the data elements for which measures are automatically taken for patient monitoring.

Reading: Shortliffe and Cimino Chapter 19

Quiz: Questions based on the week's content

Week 11: Telemedicine

Assignment: Describe a typical telemedicine implementation. What information would the remote physician likely need and what information would be provided back to the local provider.

Reading: Shortliffe and Cimino Chapter 18

Quiz: Questions based on the week's content

Week 12: Performance Measurement

Assignment: (1) Describe the relationship between research and care and the role that performance measurement plays. (2) What is the minimum performance that a facility can do and still maintain accreditation and meet their Meaningful Use Stage 3 claim? (3) Describe a performance measurement dashboard for a facility dedicated to continuous improvement.

Reading: http://www.hrsa.gov/quality/toolbox/methodology/performancemanagement/index.html

Quiz: Questions based on the week's content

Week 13: Institutional data warehousing and reporting

Assignment: Describe the type of information you would find in a hospital data warehouse that supports marketing and facility administration. How might this differ if the data warehouse were used to also support quality improvement registries and research?

Reading: from the primary literature

Quiz: Questions based on the week's content

Week 14: Health Information Exchanges (HIEs)

Assignment: Describe three different models for HIEs.

Reading: from the primary literature

Quiz: Questions based on the week's content

Week 15: The future of Information Systems in Healthcare

Assignment: Describe three forces that will shape the future of information systems in healthcare. How are today's information systems likely to change based on these forces?

Reading: Shortliffe and Cimino Chapters 27 and 28

Quiz: Questions based on the week's content

TEXTBOOKS:

Edward H. Shortliffe (Editor), James J. Cimino (Editor) 2013 Biomedical Informatics: Computer Applications in Health Care and Biomedicine (Health Informatics).

EVALUATION:

This is a graded course. Grades will be assigned based on their course average according to the following scale: A (93-100), B (85-92), C(75-84), D(65-74), Fail (lower than 64).

The course average will be comprised of course assignments and the Major project.

Assignments.....60%
Midterm exam.....20%
Final exam.....20%

6. **Program Approvals:**

Fred Prior, PhD, Deparment of Biomedical Informatics
(Print or type) Chairperson, Academic Department or Area

10/26/16
(Signature) Chairperson, Academic Department or Area Date

11/17/2014
College Dean (Dean McGehee for College of Medicine) Date

7. **Graduate School Approvals**

11/17/2016
Chairperson, Graduate Council Date

11/17/2016
Dean of the Graduate School Date