

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

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Department *Alpha (Department) Code*

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

<input checked="" type="checkbox"/> Add course	<input type="checkbox"/> Change title	
<input type="checkbox"/> Eliminate course (No outline needed)	<input type="checkbox"/> Change credit hours from: _____ to _____	
	<input type="checkbox"/> Change course number from: _____ to _____	
	<input type="checkbox"/> Change description	_____

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

B	I	O	M				
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prefix *number* Clinical Imaging Info
title (20 characters)

Clinical Imaging Informatics
catalog name (40 characters)

Scheduled offering: Fall 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 the basic principles of the field of Medical Imaging Informatics, with an emphasis on Clinical Imaging Informatics. Starting from an introduction to the basic imaging modalities, the course continues with how images are captured, stored, processed, viewed, documented, and tied into a patient's medical record.

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 degree programs.

SYLLABUS

COURSE NUMBER: BIOM _____

COURSE TITLE: Clinical Imaging Informatics

COURSE DESCRIPTION:

This graduate course covers the basic principles of the field of Medical Imaging Informatics, with an emphasis on Clinical Imaging Informatics. Starting from an introduction to the basic imaging modalities, the course continues with how images are captured, stored, processed, viewed, documented, and tied into a patient's medical record. The course covers the use of imaging information in several key medical specialties.

PRE-REQUISITES: BIOM _____ Introduction to Biomedical Informatics

GENERAL INFORMATION:

CREDITS: 3

SEMESTER: Fall, Spring

LOCATION: Campus and Online (hybrid)

FACULTY: Lawrence Tarbox, Fred Prior

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. Delineate what medical imaging informatics is.
2. Identify the major imaging modalities, explain the basic principles by which they operate, and discuss how they are used in patient care.
3. Describe how medical imaging can be integrated into a patient's record.
4. Identify the main methods by which imaging findings are recorded, analyzed and evaluated.

5. Describe the roles medical image data plays in clinical decision making.
6. Summarize the operational and environmental characteristics needed by systems used in the recording, reporting, and archiving of medical imaging data.
7. Explain the purpose of standards in Clinical Imaging Informatics.

MAJOR TOPICS:

- Overview of medical imaging informatics
- Basic imaging modalities, their use and principles of operation
 - Reflected Visible Light (photography, videography)
 - Projection Imaging (DX, XA)
 - Nuclear Medicine
 - Tomography (CT, PET, SPECT, OCT)
 - Ultrasound
 - Magnetic Resonance
- Integrating imaging into a patient's medical record
 - Overview of clinical workflow
 - Imaging information systems and architectures
 - Picture Archiving Systems (PACS)
 - Medical data visualization
- Documenting imaging findings
 - Characterizing image data
 - Reports
 - Organizing observations using data models
- Deeper dive into the main medical specialties that use imaging, covering specialty-specific issues in workflow, recording, reporting, visualization, archiving, etc.
 - Radiology
 - Cardiology
 - Ophthalmology
 - Pathology
 - ... others as time permits
- Relationship of imaging to medical decision making/clinical decision support
- Operations, infrastructure and environment for imaging workstations and systems

ASSIGNMENTS:

Listed below for each week.

Week 1: Overview of Medical Imaging Informatics; Basic imaging modalities – visible light, projection imaging, nuclear imaging

Assignment:

Reading: Chapter 1, Chapter 2 through Projection Imaging

Quiz: Questions based on the week's content

- Week 2: Basic imaging modalities (continued) – Tomography, Magnetic Resonance, Ultrasound
Assignment:
Reading: Chapter 2, remainder of “A Review of Basic Imaging Modalities”
Quiz: Questions based on the week’s content
- Week 3: Overview of Clinical Workflow and Information Systems
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week’s content
- Week 4: Electronic Medical Records, Data Standards, and Information Systems
Assignment:
Reading: Chapter 3
Quiz: Questions based on the week’s content
- Week 5: Medical Data Visualization
Assignment:
Reading: Chapter 4
Quiz: Questions based on the week’s content
- Week 6: Characterizing Imaging Data
Assignment:
Reading: Chapter 5
Quiz: Questions based on the week’s content
- Week 7: Reporting
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week’s content
- Week 8: Data Models
Assignment:
Reading: Chapter 7
Quiz: Questions based on the week’s content
- Week 9: Disease Models Part 1
Assignment:

- Reading:* Chapter 8
Quiz: Questions based on the week's content
- Week 10: Disease Models Part 2
Assignment:
Reading: Chapter 9
Quiz: Questions based on the week's content
- Week 11: Radiology
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week's content
- Week 12: Ophthalmology
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week's content
- Week 13: Pathology
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week's content
- Week 14: Other specialties
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week's content
- Week 15: Operations, infrastructure and environment for imaging workstations and systems
Assignment:
Reading: from the primary literature
Quiz: Questions based on the week's content

TEXTBOOKS:

Alex A.T. Bui, Ricky K. Taira (editors). Medical Imaging Informatics. Springer, 2010. ISBN 978-1-4419-0384-6, e-ISBN 978-1-4419-0385-3, DOI 10.1007/978-1-4419-0385-3

(Optional, Supplemental, for CIIP exam) Barton F. Branstetter IV (editor). Practical Imaging Informatics. Springer 2009. ISBN 978-1-4419-0483-6, e-ISBN 978-1-4419-0485-0, DOI 10.1007/978-1-4419-0485-0

EVALUATION:

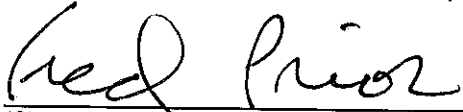
This is a graded course. Grades will be assigned based on their course average according to the following scale: A (93-100), B (85-92), C(75-84), D(65-74), Fail (lower than 64).

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

Assignments.....	30%
Quizzes.....	30%
Midterm exam.....	20%
Final exam.....	20%

6. Program Approvals:

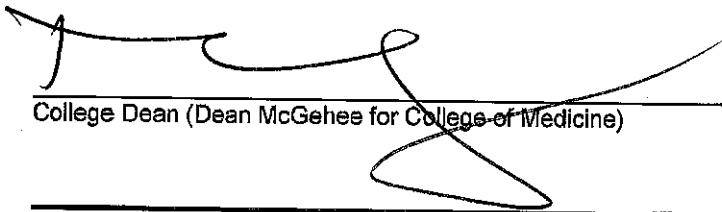
Fred Prior, PhD, Department of Biomedical Informatics
(Print or type) Chairperson, Academic Department or Area



10/26/16

(Signature) Chairperson, Academic Department or Area

Date



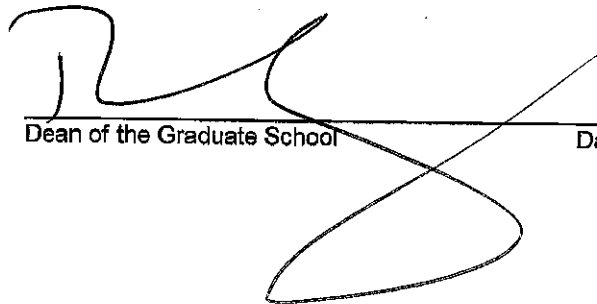
College Dean (Dean McGeehee for College of Medicine)

Date

11/17/2016

7. Graduate School Approvals

 11/17/2016
Chairperson, Graduate Council Date



Dean of the Graduate School

Date

11/17/2016