

## **Course Syllabus**

### **Course Information**

*Course Number/Section* HMG 6323/MIS 6317  
*Course Title* Healthcare Informatics  
*Term* Fall 2023  
*Meetings* Mondays 7 PM, JSOM 2.714

### **Professor Contact Information**

*Professor* Mehmet U.S. Ayvaci  
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*Email Address* mehmet.ayvaci@utdallas.edu  
*Office Location* JSOM 3.202  
*Online Office Hours* By email, can setup a time to meet  
*TA:* Ozgur Aksoy, ozgur@utdallas.edu  
*TA Office Hours* By email, can set a time to meet

### **Course Modality and Expectations**

<b>Course Platform</b>	This class is taught in the classroom.
<b>Expectations</b>	(1) Students can attend class in person. (2) Students can use the class time to interact with the instructor real time. (3) There is no class attendance requirement for lectures, but attendance can help in boosting grades through extra credit. (4) Instructor will post discussions on a regular basis, using eLearning tools. Student involvement in these discussions accounts towards participation (which boosts your grade and ensures engagement).
<b>Learning Guidelines</b>	All lecture material will be available for all students (lecture will not be recorded). <u>You need to follow along at the pace of the class whether you attend the class or not.</u>

### **Course Pre-requisites, Co-requisites, and/or Other Restrictions**

None

This course is a core course for the M.S. degree in Healthcare Management and an elective for the Healthcare Analytics track in the M.S. degree in Business Analytics. It is also an elective course for the M.S. degree in Information Technology Management (Healthcare Systems Track) and the MBA degree (Healthcare Concentration). The course is ideally suited to students who wish to focus on careers in the healthcare industry, as health IT analysts, policy analysts, managers or administrative staff, or healthcare consultants, who wish to develop a better understanding of healthcare informatics.

### **Healthcare Certificate Program Requirements**

A qualifying grade in this class fulfills one of the requirements to receive Academic Certificates in Healthcare Information Technology and Lean Six Sigma Healthcare Quality – Yellow Belt from UTD. For more information or to apply for admission to the certificate programs, please go to <https://osim.utdallas.edu/program-resources/healthcare-certificates/healthcare->

[it/](https://osim.utdallas.edu/program-resources/healthcare-certificates/lean-six-sigma-yellow-belt/) and <https://osim.utdallas.edu/program-resources/healthcare-certificates/lean-six-sigma-yellow-belt/>."

### **Course Description**

According to the U.S. National Library of Medicine, "health informatics is the interdisciplinary study of the design, development, adoption, and application of IT-based innovations in healthcare services delivery, management, and planning".

Building on this foundation, Healthcare Informatics (HI) is the use of digital information from a variety of technologies and disciplines to create processes leading to reduced medical errors, lower healthcare costs, and improved treatment quality. In other words, healthcare informatics seeks to convert data generated by clinical and non-clinical technologies into useful information. This information is used to create evidence-based knowledge, and this knowledge, in turn, leads to active interventions designed to improve patient care and lower healthcare costs.

This course has been designed to explore the healthcare information technology planning and management issues associated with decision making in healthcare organizations. IT provides a framework to understand the types of information systems prevalent in healthcare organizations, evaluate specific strategies related to healthcare IT investments, and understand the ramifications of health data standards and privacy concerns on information management policy. In this course, you will learn how the core competencies of healthcare informatics can be developed and applied using real-world case studies. You will be exposed to specific concepts related to system architecture, electronic medical records (EMR), health data and standards, sourcing, and IT investments in healthcare.

Upon completion of the course, you should be able to explain the key information requirements for effective health information management and decision support, plan and develop the governance and oversight requirements of healthcare IT projects, understand the specification and selection process of healthcare projects, and apply these competencies to real-world problems. Major topics include:

- Common healthcare information architectures
- Healthcare information/data management
- The integration of healthcare information systems
- Clinical information systems / electronic medical records
- IT Governance in healthcare organizations
- Key processes and management of healthcare IT
- Key legislation defining Health IT industry

### **Student Learning Objectives/Outcomes**

1. Student will develop appropriate performance measurement and reporting mechanisms to plan and evaluate the impact of IT initiatives in healthcare settings
2. Students will identify healthcare data, IT architecture, information processing requirements, and demonstrate an understanding of analytics and regulatory reporting for clinical and administrative purposes.
3. Student will develop a better understanding of current and emerging issues in healthcare information technology management.

## CAHME Competency Model Mapping

### Domain 2: Leadership

- Critically analyze organizational issues after a review of the evidence. (SLO1)

### Domain 4: Knowledge of the Healthcare Environment

- Show an understanding of major historical events in healthcare and medicine (SLO 2)

### Domain 5: Business Knowledge and Skills

- Demonstrate an ability to evaluate existing and emerging technologies in planning the technological direction to support organizational strategy and systems architecture (SLO 3)
- Demonstrate an ability to analyze and evaluate information to support a decision or recommendation (SLO 2)

## Required Textbooks and Materials

### Required Texts

([Available online at UT Dallas Library](#)) "[Health Care Information Systems](#)" by Karen Wager, Frances Lee, and John Glaser. Josey-Bass Publishers A Wiley Brand. Fourth Edition, 2017. ISBN-13: 978-1119337188. (2022 edition is available, but lectures will make up for the more up to date info)

([Available online at UT Dallas Library](#)) Trotter, F., & Uhlman, D. (2011). [Hacking healthcare: A guide to standards, workflows, and meaningful use](#). " O'Reilly Media, Inc."

### Required Materials

Visit eLearning for all course-related information including syllabus, lecture notes, self-quizzes, and assigned discussion problems.

## Suggested Course Materials

### Suggested Readings/Texts

The instructor will supplement course materials with other readings via email or web links. No need for purchase.

### Suggested Materials

None

Textbooks and some other bookstore materials can be ordered online or purchased at the [UT Dallas Bookstore](#).

## Academic Calendar

MODULE/ DATES	TOPIC	ASSIGNED READINGS	ASSESSMENT/ ACTIVITY	DUE DATE
I Aug 21	<b>Health Care Information Technology Today</b> <ul style="list-style-type: none"><li>• Definitions</li><li>• Brief History of HIT</li><li>• HIT Domains Today</li><li>• The HIT Landscape Today</li></ul>	<ul style="list-style-type: none"><li>• Chapter 1 (Wager)</li><li>• Lecture Notes</li><li>• Chapter 1, 9 (Trotter)</li></ul>		

<b>II</b> Aug 28	<b>The Business of Healthcare, Patient's Journey in Healthcare System and Data Needs</b> <ul style="list-style-type: none"> <li>• An Anatomy of Medical Practice</li> <li>• Demonstrate EMR software usage for clinical workflow</li> <li>• Major types of healthcare information</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture Notes</li> <li>• Chapter 2 (Wager)</li> <li>• Chapter 2, 3, 4, 5 (Trotter)</li> </ul>	Assignment 1	Due Sep 3 11 PM
Sept 4	<b>Labor Day</b>			
<b>III</b> Sep 11	<b>Healthcare Architecture, Data, and Information Systems</b> <ul style="list-style-type: none"> <li>• Common Applications Architecture</li> <li>• Before and After the Electronic Medical Record</li> <li>• Legal Aspects of managing health information</li> <li>• Certification and accreditation (JCAHO)</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 3 (Wager)</li> <li>• Lecture Notes</li> <li>• Chapter 11 (Trotter)</li> </ul>	Quiz 1 offered in eLearning	Available Sep 15-16 (9 AM-11 PM)
<b>IV</b> Sep 18	<b>Reimbursement Reform and Population Health as an Healthcare Informatics Driver</b> <ul style="list-style-type: none"> <li>• Assuming Risk</li> <li>• Populations, Bundles, and ACOs</li> <li>• Role of HCIS in Improving healthcare delivery</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 4 (Wager)</li> <li>• Lecture Notes</li> </ul>	Assignment 2	Due Sep 24 11 PM
<b>V</b> Sep 25	<b>Rise of the Electronic Medical Record</b> <ul style="list-style-type: none"> <li>• Major Legislation Related to Health IT</li> <li>• EMRs Large and Small</li> <li>• Realizing the Digital Health Promise with EHRs</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 8 (Trotter)</li> <li>• Lecture Notes</li> </ul>	Quiz 2 offered in eLearning	Available Sep 29 – 30 (9 AM-11 PM)
<b>VI</b> Oct 2	<b>Data Models</b> <ul style="list-style-type: none"> <li>• Relational Data Model</li> <li>• An Intro to SQL</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture Notes</li> </ul>	Assignment 3	Due Oct 8 11 PM

<b>VII</b> Oct 9	<b>Building a Data Integration Architecture – A Thought Experiment. What Would Dr. Snow Do?</b> <ul style="list-style-type: none"> <li>• HIT Data Standards</li> <li>• Components of an Information Architecture</li> <li>• Data Transformation Data Types</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture Notes</li> <li>• Chapter 10 (Trotter)</li> <li>• Chapter 11 (Wager)</li> </ul>	Quiz 3 offered in eLearning	Available Oct 13-14 (9 AM-11 PM)
Oct 16	<b>EXAM</b> <ul style="list-style-type: none"> <li>• Offered in testing center.</li> <li>• <a href="#">Book your spots</a> latest 48 hours prior to exam</li> <li>• You can bring ONE page 8.5 x 11 Double-Sided Handwritten Notes to the exam</li> </ul>			Oct 16 (8:30AM-9PM)
<b>VIII</b> Oct 23	<b>An Overview of Healthcare Analytics</b> Types of Analytics <ul style="list-style-type: none"> <li>• Good Dashboards. Bad Dashboards</li> <li>• Artificial Intelligence</li> </ul> Visual presentation of information	<ul style="list-style-type: none"> <li>• Tufte Reading</li> <li>• Lecture Notes</li> </ul>		
<b>IX</b> Oct 30	<b>Health IT Systems Acquisition</b> <ul style="list-style-type: none"> <li>• Acquisition Lifecycle</li> <li>• Acquisition Governance</li> <li>• Outsourcing Considerations</li> <li>• Total Cost of Ownership</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 5 (Wager)</li> <li>• Lecture Notes</li> </ul>	Assignment 4	Due Nov 5 11 PM
<b>X</b> Nov 6	<b>HIT Strategic Planning</b> <ul style="list-style-type: none"> <li>• Planning Methodology</li> <li>• Strategic Plan Deliverables</li> <li>• IT Alignment</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 12 (Wager)</li> <li>• Lecture Notes</li> </ul>	Quiz 4 offered in eLearning	Available Nov 10-11 (9 AM-11 PM)
<b>XI</b> Nov 13	<b>Organizing IT Services</b> <ul style="list-style-type: none"> <li>• Systems implementation process</li> <li>• Project plans and planning</li> <li>• Resource allocation</li> <li>• Accountability and roles</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 6 (Wager)</li> <li>• Chapter 8 (Wager)</li> <li>• Chapter 7 (Trotter)</li> <li>• Lecture Notes</li> </ul>		
Nov 20	<b>FALL BREAK</b>			

XII Nov 27	<b>Technology Buzzwords and Trends</b> <ul style="list-style-type: none"> <li>• Big Data</li> <li>• Block Chains</li> <li>• Cloud Computing</li> <li>• Ubiquitous Connectivity</li> </ul> Gartner Healthcare and Technology hype cycles	<ul style="list-style-type: none"> <li>• Lecture Notes</li> <li>• Readings to be assigned.</li> <li>• Chapter 6, 13 (Trotter)</li> </ul>	Quiz 5 offered in eLearning	Available Dec 1-2 (9 AM-11 PM)
Dec 4	Case Analysis		Group Case Projects	Due Dec 4 11 PM

### **Student Assessments**

**Grading:** The course grade will be based on the following components:

- (1) **Quizzes (30%):** You will be given five **timed** quizzes (assigned **individually**) throughout the course of the semester. Each quiz will be available only during the specific date (after 9AM) indicated on the academic calendar, and is due by the end of the day (by 11PM) indicated in elearning (on the day shown in the academic calendar). Each has about 12 questions to be completed within 12-15 minutes. Each will have a weight of 6%. Quizzes are NON-CUMULATIVE, you will be responsible for lectures since the last quiz. You may begin a quiz any time during the availability window, however, once ‘opened’ you will have only the allotted time to complete. The quizzes are open notes. One question will be presented at a time and you will NOT be allowed to backtrack questions (this is not subject to change, so please do not ask for backtracking to be allowed)! PLEASE PLAN YOUR TIME WISELY. Please read the on-screen instructions carefully before you click begin. Reserve a time when you will not be disturbed. Also have all material (e.g. text, notes, lecture slides) ready before accessing the quiz. Don’t waste valuable time “getting organized” after you have accessed the quiz/exam. Because questions are presented one by one and no backtracking allowed, you will need to be prepared even though quizzes are open notes. If you have studied the subject material, the allotted time will be more than enough. If you haven’t studied the subject material, you will not be able to navigate your notes in the given time. All quizzes must be submitted via eLearning. Any work sent via email will not be accepted.
  
- (2) **Exam (30%):** There will be a timed multiple-choice exam, in the second half of the semester (as shown on the academic calendar). The exam is proctored, and you should take it at the UTD Testing Center. If your circumstances require that you need to take the exam at another approved proctoring center, you should consult with the instructor at the beginning of the semester.<sup>1</sup> The exam will cover course material (text, lecture

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<sup>1</sup> If you need to take the exam at an off-campus testing center, you need to check with the instructor at the **beginning** of the semester, during the first 2 weeks, to have permission. After receiving permission students then need to locate an approved Testing Center. **ALL** proctored exam applications must be submitted and received by the UT Dallas Testing Center **at least 15 business days** prior to the exam date. The UT Dallas Testing Center will adhere to the 15-business day deadline submission, **no exceptions**. If you fail to submit

otes, and readings) taught prior to exam date. The Mid-term exam should be done individually. Exam will be CUMULATIVE and will cover course material (textbook chapters, lecture notes, and readings) taught prior to it. You may expect about 50-60 questions to be done within 50-60 minutes (subject to change). Unlike quizzes, backtracking will be allowed. All exams should be taken during the Testing Center hours **(8:30am to 9:00pm)**. Please be sure to see and follow the **Student Guidelines** found on the Testing Center main page. All students are required to make a reservation using the **Reserve Your Seat** application found on the Testing Center main page, **at the latest, 48 hours prior to exam**. I will make an announcement to you when the Testing Center will be ready to take your reservations. The UTD Testing Center is located in Synergy Park North 2 building (SP2), Room 11.175. When you arrive to take your exam, you will sign in with your **Comet Card**.

- (3) **Homework (20%)**: I will assign four homework assignments throughout the course of the semester. Students are expected to work individually to complete their homework assignments unless the instructor assigns the homework as a group. Each HW assignment will count toward 5% of the grade and is due by the date and time indicated in the academic calendar. Assignments **have to be submitted via the eLearning website. Emailed assignments will not be accepted**. Late submissions will be penalized by 20% of the individual homework grade and will not be accepted beyond the 48-hour mark past the due time. It is your responsibility to check the eLearning for the assignments.
- (4) **Collaborative Group Case Presentation (20%)**: This is a required collaborative project. The class will be divided into groups (group size will depend on class enrollment and you will be permitted to choose your own group members). Each group is required to submit their case analysis by the required due date via eLearning. Each group member should contribute actively to the group. Each group will be assigned a case from a link that the instructor will post one month (latest) prior to due date. Submission date is December 4, 2023 11 PM (expect guidelines to be posted right after the exam). Cases will be available via an online Course Pack on the Harvard Business Publishing web site. Detailed instructions for preparing and submitting group cases will be available when cases are assigned.

**There will be peer evaluations** at the end of the semester to adjust for lack of contribution. If you did not contribute, but have gotten a good grade because of your group peers, do expect a deduction from case grade at the end. Group cases must be submitted via eLearning. Any work sent via email will not be accepted

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your application by the 15-business day deadline, you will need to register for and take the exam at the UTD testing center on the designated date.

### **Course Policies**

<b>Grading Policy</b>	<p>The following grading policy will be adopted for the class: <b>A, A-, B+, B, B-, C+, C, C-, P (pass), F (Fail)</b>. The final letter grade in the class will be based on a curve. Per Jindal policy the average final grade is expected to be around B+ (3.3). However, this average can be high (or lower) based on overall class performance. I will use the plus/minus grading system and details on the plus/minus breakdown will be presented in class. You may expect the following grade distribution: approximately 30-35% will receive an A or A-, about 15-20% a C+ or below, and 45-55% will receive a B+, B, or B-. <u>Note that, this distribution of grades do not depend on the actual grade.</u> For example, a grade of 93 can be the cutoff for grade A or a grade of 85 can be the same cutoff if the class averages are lower. <b>Hence, the grading is all relative to your peers. SHARING QUIZ OR EXAM QUESTIONS WITH OTHERS WILL BE CONSIDERED ACADEMIC DISHONESTY, WHICH WILL TRIGGER THE DUE ACADEMIC PROCEDURES. STUDENTS GIVING AWAY QUESTIONS OR THOSE WHO ARE TAKING QUESTIONS FROM OTHERS WILL RECEIVE A FAILING GRADE. NOTE THAT BECAUSE THE GRADING IS RELATIVE, YOU ARE HURTING YOUR OWN GRADE BY GIVING AWAY QUESTIONS EVEN NOT CAUGHT FOR ACADEMIC DISHONESTY!</b></p>
<b>Make-up Exams</b>	NONE
<b>Extra Credit</b>	Instructor will use online in-group discussions and thoughtful participation towards extra credit. Occasionally collected attendance can be counted as extra credit. There may also be opportunities for a bonus assignment.
<b>Late Work</b>	See grading for policies.
<b>Special Assignments</b>	NONE
<b>Class Attendance</b>	Assessed through Elearning Discussion Forums. Occasionally, the instructor may collect class attendance and grant bonus points to attending students.
<b>Classroom Citizenship</b>	NA (except through peer evaluations for team work)
<b>Comet Creed</b>	<p><i>This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:</i></p> <p><i>“As a Comet, I pledge honesty, integrity, and service in all that I do.”</i></p>
<b>Academic Support Resources</b>	<p><i>The information contained in the following link lists the University’s academic support resources for all students.</i></p> <p><i>Please go to <a href="http://go.utdallas.edu/academic-support-resources">http://go.utdallas.edu/academic-support-resources</a>.</i></p>
<b>UT Dallas Syllabus Policies and Procedures</b>	<p><i>The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.</i></p> <p><i>Please go to <a href="http://go.utdallas.edu/syllabus-policies">http://go.utdallas.edu/syllabus-policies</a> for these policies.</i></p>



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## **Class Recordings**

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

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## **Class Participation**

Regular class participation (e.g., through online discussions, assignments, projects) is expected regardless of asynchronous access. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by the instructor. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

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## **Class Materials**

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

## **Technical Requirements**

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

**Course Access and Navigation**

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website.

Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information.

To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

**Communication**

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the [Student eLearning Tutorials](#) webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

**Distance Learning Student Resources**

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the [eLearning Current Students](#) webpage for more information.

**Server Unavailability or Other Technical Difficulties**

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

**COVID-19 Guidelines and Resources**

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record.

Please see <http://go.utdallas.edu/syllabus-policies>.

*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.*