



Department of Health Administration and Policy

College of Health and Human Services

Syllabus	
Course Information	HI 720: Health Data Integration Location: Distance Education/Blackboard
Instructor	See online course Office Hours by appointment.
Course Description	Students learn to manipulate large databases, understand sources of data conflicts, and identify methods of integrating databases with legacy data using XML technology. Covers data cleaning, validating and transforming methods of analyzing large databases in health care context.
Course Objectives	<p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explore the importance and challenges in data integration. <input type="checkbox"/> Explain and demonstrate XML technology for health data integration. <input type="checkbox"/> Explain trends in health data in particular HL7 Clinical Document Architecture (CDA). <input type="checkbox"/> Define HL7 Fast Healthcare Interoperable Resource (FHIR) and FHIR APIs. <input type="checkbox"/> Apply matching algorithms (schema matching, code system matching, and patient matching) to integrate data from multiple sources.
Course Methodology	The class format will combine reading, lectures, presentations, and other learning tools. The class will be interactive and require every student to be engaged in the classroom discussion and assignments. In addition to the lectures, screencasts and timely completion of assignments, every student will be expected to be an avid consumer of health informatic industry trends, an active participant and a dedicated individual applying what you learn to every element of the course work.
Required textbook(s) and/or materials	<ol style="list-style-type: none"> 1. E. R. Harold and W. S. Means. XML in a Nutshell, 2nd or later editions. O'Reilly Media (eBook offer at http://books.google.com). 2. EditpadPro http://www.editpadpro.com/ <ul style="list-style-type: none"> • You need the features of a licensed version (\$49.95). • The free EditPad Lite does not support XML processing. • You need a Windows based PC to run EditpadPro to process XML • If you use Mac you need to run your PC in Windows mode

3. Other reading materials will be distributed as the course progresses.

Course Grading

Percentage	Grade
96 and above	A
90-95	A-
86-89	B+
80-85	B
76-79	B-
70-75	C
70 and below	F

Letter Grading Descriptions:

Listed below are grades and academic standards for each grade awarded.

A = 96% and above

Clearly stands out as excellent work. An "A" grade work could be used as a model for other students to emulate. Shows excellent grasp of subject matter, conceptual integration, and excellent skills.

A- = 90-95%

Represents high quality performance. Shows excellent grasp of subject matter and conceptual integration. Shows a high level of thinking, analysis, application, and very good skills.

B+ = 86-89%

Represents very good work. Shows thorough grasp of subject matter and effective application. Shows good thinking, analysis, and good skills.

B = 80-85%

Represents satisfactory work. Shows adequate level of thinking, analysis, and satisfactory skills.

B- = 76-79%

Work is below graduate level expectations, skills are below expectation.

C = 70-75%

Work is clearly unsatisfactory.

F = 70% and below

Fails to meet minimum acceptable standards.

<p>Computer Requirements</p>	<p>This is a computing intensive course, and all students are required to complete assignments and projects using computer software. Health informatics professionals should know their computers well.</p> <p>Minimum computer (laptop or desktop) system requirements: Multicore (preferable Intel VT/AMD-V), 8GB RAM, at least 512 GB storage (and 200GB+ free), webcam, speakers, good internet connection.</p> <p>Mac computers are allowed, but students need to do additional configuration – some assignments require windows. Mac users should be able to use Windows through virtualization software. Students must be able to install software and configure their computers, configure security settings, firewall, etc.</p> <p>Students are strongly encouraged to backup all contents of their computers on regular basis. Loss of data cannot be used as excuse for late or not submitted assignments/projects.</p> <p>The class does not require students to purchase any specialized software.</p> <p>Expectations: Students are responsible for assigned readings, class content and material. Students are also responsible for finding the right computer equipment that allows accessing the course materials online and completing all computing exercises, as well as checking email/blackboard on daily basis.</p>
<p>Mason Honor Code</p>	<p>The complete Honor Code is as follows:</p> <p><i>To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.</i></p> <p><i>(From the Catalog – catalog.gmu.edu)</i></p>
<p>Individuals with Disabilities</p>	<p>The university is committed to providing equal access to employment and educational opportunities for people with disabilities.</p> <p>Mason recognizes that individuals with disabilities may need reasonable accommodations to have equally effective opportunities to participate in or benefit from the university educational programs, services, and activities, and have equal employment opportunities. The university will adhere to all applicable federal and state laws, regulations, and guidelines with respect to providing reasonable accommodations as necessary to afford equal employment opportunity and equal access to programs for qualified people with disabilities.</p> <p>Applicants for admission and students requesting reasonable</p>

accommodations for a disability should call the Office of Disability Services at 703-993-2474. Employees and applicants for employment should call the Office of Equity and Diversity Services at 703-993-8730. Questions regarding reasonable accommodations and discrimination on the basis of disability should be directed to the Americans with Disabilities Act (ADA) coordinator in the Office of Equity and Diversity Services.

(From the 2017-18 Catalog – catalog.gmu.edu)

E-Mail Policy

Web: masonlive.gmu.edu

Mason uses electronic mail to provide official information to students. Examples include notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback.

Students are responsible for the content of university communication sent to their Mason e-mail account and are required to activate that account and check it regularly.

Students are also expected to maintain an active and accurate mailing address in order to receive communications sent through the United States Postal Service.

(From the 2017-18 Catalog – catalog.gmu.edu)

Course Evaluation

Teaching – Learning Strategies

- Lectures
- Practice Activities
- Assignments
- Mid Term Examination
- Data Integration Project

Grading Components	Percentage of Course Grade
Assignments	50%
Mid Term Examination	25%
Data Integration Project	25%
Total:	100%

Assignments – 50%

Each week assignments are required to be uploaded to Blackboard. Assignments are due by Sunday, 11:55 PM, ET unless otherwise stated. Refer to the course schedule and weekly overviews for details.

Mid Term Examination– 25%

In order to complete this exam, you must submit three files to Blackboard.

1. An XML file named “Firstname_Lastname_HAP720.xml” for the data
2. An XSD file named “Firstname_Lastname_HAP720.xsd” for the schema, and

	<p>3. A Word file named "Firstname_Lastname_HAP720.doc" that includes screenshots of validation (error detections). Each student will upload their files by Sunday, 11:55 PM, ET.</p>
<p>Data Integration Project – 25%</p>	<p>The purpose of the data integration project is to practice the data integration methods. This project has three phases. You are required to submit each part of work on the following weeks.</p> <p>The project contains two source files:</p> <ul style="list-style-type: none"> • SEER • Claims <p>The SEER file contains patient's' demographic information, ICD, date of death, and so on. The Claims file contains patient's' demographic, ICD, HCPCS, date of death, price, date of claims, and so on.</p> <p><u>Phase One:</u> schema matching. In this phase, you can use a third table which contains the Master Patient Index (MPI). You need to integrate two source file based on the MPI.</p> <p><u>Phase Two:</u> coding matching. In this phase, you need to map the ICD9CM to ICD10CM codes.</p> <p><u>Phase Three:</u> Patient matching. In the last phase, we assume that the MPI does not exist. This is the common situation when you try to integrate two source files in the real world. In this case, patient matching algorithms (such as patients' demographic and clinical information) are applied to integrate the files.</p> <p>Instructions: In order to complete this project you must submit each phase in three parts, (1) Codes (2) Results, and (3) A summary for your findings to Blackboard. Please reference the deliverable dates below.</p> <p>Deliverables: Week 5 - Nothing due this week! Week 6 - Phase One due. Week 7 - Phase Two due. Week 8 - Phase Three Due</p>
<p>Need Help? Personal Support Center, call 24/7: 1-844-306-1785 or Mason@personalsupportcenter.com</p>	

HAP720- Course Schedule
All course times are in ET.

Week	Module	Assignments
1	Overview, XML Introduction	<p>Week 1 Introductions - Make at least one original post by 11:55 PM, Friday react to at least two of your peers' posts by 11:55 PM, Sunday</p> <p>LM1: Overview - You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM1 Assignment 1 -You must submit this assignment by 11:55 PM, Sunday • LM1 Assignment 2 -You must submit this assignment by 11:55 PM, Sunday <p>LM2: XML Introduction: You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM2: Assignment 1: You must submit this assignment by 11:55 PM, Sunday • LM2: Assignment 2: You must submit this assignment by 11:55 PM, Sunday
2	XML Schema, XML Transformation	<p>LM3: XML Schema - You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM3 Assignment 1 -You must submit this assignment by 11:55 PM, Sunday • LM3 Assignment 2 -You must submit this assignment by 11:55 PM, Sunday • LM3: Assignment 3: You must submit this assignment by 11:55 PM, Sunday <p>LM4: XML Transformation: You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM4: Assignment: You must submit this assignment by 11:55 PM, Sunday
3	HL7 RIM, CDA/CCDA	<p>LM5: HL7 RIM, CDA/CCDA - You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM5: Assignment 1: You must submit this assignment by 11:55 PM, Sunday • LM5: Assignment 2: You must submit this assignment by 11:55 PM, Sunday
4	HL7 FHIR	<p>LM6: HL7 FHIR - You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p>

		<ul style="list-style-type: none"> • LM6: Assignment: You must submit this assignment by 11:55 PM, Sunday <p>Midterm Examination: You must submit this exam by 11:55 PM, Sunday</p>
5	HL7 FHIR APIs	<p>Data Integration Project Introduction: nothing due this week.</p> <p>LM7: HL7 FHIR APIs- You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM7: Assignment: You must submit this assignment by 11:55 PM, Sunday
6	Schema Matching	<p>Data Integration Project: You must submit phase one by 11:55 PM, Sunday</p> <p>LM8: Schema Matching- You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM8: Assignment: You must submit this assignment by 11:55 PM, Sunday
7	Code Matching	<p>Data Integration Project: You must submit phase two by 11:55 PM, Sunday</p> <p>LM9: Code Matching- You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM9: Assignment 1: You must submit this assignment by 11:55 PM, Sunday • LM9: Assignment 2: You must submit this assignment by 11:55 PM, Sunday
8	Patient Matching	<p>Data Integration Project: You must submit phase three by 11:55 PM, Sunday</p> <p>LM10: Patient Matching- You must complete all of the learning opportunities in this module by 11:55 PM, Sunday</p> <ul style="list-style-type: none"> • LM10: Assignment: You must submit this assignment by 11:55 PM, Sunday