

PubH 6813
Managing Electronic Health Information
Spring 2019

Credits: 2

Meeting Days: Thursdays

Meeting Time: 5:45PM – 7:30PM

Meeting Place: Mayo Bldg C381

Instructor: Soo-Young Lee, leex1867@umn.edu

TA: N/A

Office Address: N/A

Cell Phone: (612) 424-0460

Office Hours: By appointment only

Course Description:

Managing health information is a central function of health care organizations. Information is used for managing population health, profiling providers, and measuring quality. This course describes relational data theory, normalization, and Structured Query Language (SQL) will be used to create and query databases. Students will be introduced to the basic programming skills necessary to manage data in research projects. Programming aspects of the course will use SQL procedure in the SAS language.

Course Prerequisites:

Admission to a University of Minnesota Master's program or Permission of instructor. There is no database or programming experience required.

Course Goals and Objectives:

- The core principles of relational data modeling - relations, attributes, functional dependency, keys, normalization and normal forms, modification anomalies, referential integrity, simple and group attributes; cardinality; domains; simple, composite, compound, hybrid, association, parent/subtype objects.
- The basics of SQL: Structured Query Language.

- At the conclusion of the course, you will be able to:
- Construct measures from health information and describe the measurement quality and reliability.
- Translate business objects and rules in a user's problem domain to relational data models/
- Construct a normalized relational data model from semantic objects.
- Select data, grouping data, reporting data using SQL.
- Combine information from multiple tables using joins in SQL.
- Structure queries with sub-queries and correlated sub-queries using SQL.
- Constructing quality measures, prevalence measures and measures of comorbidity using SQL

Schedule:

- Week 1: Course introduction, Moodle, W3 Database Engine, course data, what is a database
 - HW:
 - Explore the W3 Database Engine (due before week 2)
 - Read Rockoff, chapter 1 until heading "Relational Databases" (due before week 2)
- Week 2: Thinking like an analyst/programmer/data curator, your first SELECT statement
 - HW: Read Rockoff, chapter 7 (due before week 3)
- Week 3: Filtering and Boolean logic, subqueries, calculated fields, functions
 - HW:
 - Read Rockoff, chapter 9 until heading "Ranking Functions" (due before week 4)
 - **Complete assignment #1** (due before week 4)
- Week 4: Grouping data for aggregation analysis, aliases, sorting
 - HW:
 - Read Rockoff, chapter 8 (due before week 5)
 - **Complete assignment #2** (due before week 5)
- Week 5: Project #1 – Introduction
 - HW:
 - **Complete project #1** (due before week 8)
 - Read Rockoff, chapter 1 starting from heading "Relational Databases" (due before week 9)
 - Read Rockoff, chapter 11 (due before week 9)
- Week 6: Project #1 – Working session
- Week 7: Project #1 – Presentations
- SPRING BREAK
- Week 8: Misc topics, normalization, relational data theory
 - HW: **Complete assignment #3** (due before week 9)
- Week 9: Joins part 1
 - HW: **Complete assignment #4** (due before week 10)
- Week 10: Joins part 2

- HW: **Complete assignment #5** (due before week 11)
- Week 11: Competency exam review
- Week 12: Competency exam
- Week 13: Project #2 – Introduction
 - HW: **Complete project #2** (due before week 15)
- Week 14: Project #2 – Working session
- Week 15: Project #2 – Presentations
- Week 16: Competency exam make up

Methods of Instructions and Work Expectations:

The course includes lectures, participation, leading a class discussion, a paper, and two examinations.

Participation:

Reading and homework assignments are listed by date on the course schedule.

Class participation will be evaluated by students' preparation for and participation in class discussion. Note that there is no actual grade for participation.

The class material is cumulative with relational data theory and SQL topics building on the prior week's assignments. Some classes include both lecture and laboratory time, with the laboratory time for skill development and practice. To use this time effectively, students are expected to have the homework assigned for the class completed at the start of the class and be prepared to discuss issues related to completing the homework. Homework that is not completed on time will result in a reduction in the participation grade.

Homework and Assignments:

The assignments include exercises in relational data theory and SQL. The SQL exercises will use SAS/SQL, will focus on measuring, monitoring, and reporting population health management using Medicare's Synthetic Public Use File that will be available on Google Drive.

Students are encouraged to revise the SQL programs to correct errors. Each homework assignment can be revised and resubmitted, the average score of submissions will be the final grade for an assignment. This only applies to the homework assignments and not project work. Late assignments will receive a 10% penalty for each day rounding up.

Exams:

There will be one exam during the semester that will cover all topics presented during the course. On the final week of class is an optional retake for the exam, if this is taken, the average of the two scores will be taken for the final grade.

Projects:

There will be two projects that will allow students to both solve more open ended problems and also reinforce concepts using data from different domains. Projects will consist of the actual project work and a presentation which will give an opportunity to teach new concepts and challenges that are apparent in each project assignment.

Course Text and Readings:

SQL Larry Rockoff. The Language of SQL (2nd Edition). 2016. Pearson Education. There is no specific version required for this course, the text will generally be the same from version to version.

Evaluation and Grading:

Homework assignments (average of original submission and resubmission): 30%

Project #1: 15%

Project #2: 25%

SQL Competency Exam (average of both exams if taken twice): 30%

Late SQL assignments will receive a 10% penalty for each day rounded up

Students who score less than 70% on both the exam and exam retake can earn no higher than a B- as a final course grade.

Course grades are at the “Student Option” basis, either S/N (pass/fail) or A-F letter grade.

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements

A- 3.667

B+ 3.333

B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements

B- 2.667

C+ 2.333

C 2.000 - Represents achievement that meets the course requirements in every respect

C- 1.667

D+ 1.333

D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements

S Represents achievement that is satisfactory, which is equivalent to a C- or better.

For additional information, please refer to:

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>

Grade Requirements for Certain Programs:

This course is a core course for the MS-HSRPA Plan B, Health Intelligence & Analytics, the MPH in Public Health Informatics, and the Certificate in Public Health Informatics. If you are enrolled in one of these programs and you wish to receive credit for it if you successfully complete the course, you need to enroll for a letter grade (A through F). For the requirements for other academic programs, please check with your academic program advisors.

Course Evaluation:

The SPH will collect student course evaluations electronically using a software system called CoursEval: www.sph.umn.edu/courseeval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts:

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy - A link to the policy can be found at onestop.umn.edu.

Other Course Information and Policies:

Moodle:

The Moodle site contains the dates and times for assignments and exams and material to support the course. It is your responsibility to be familiar with the material on Moodle. Moodle, the Syllabus, assignments, and exams have been checked for completeness and consistency. However, inconsistencies and errors may be present. Please email the course instructor with any issues you find so they can be fixed.

Moodle and Syllabus:

Moodle, the Syllabus, and assignments may change during the term. While efforts will be made to inform you of changes, you are responsible for monitoring the course material for changes.

Classroom Recordings:

No student may record or tape any classroom activity without the express written consent of Soo-Young Lee.

Changes to this Syllabus:

The instructor reserves the right to modify any of the material in the Syllabus and Class Schedule with sufficient notice given to course participants. The course syllabus is a specific plan for the course but sometimes external circumstances result in changes. These changes will be discussed with the class and posted to Moodle Announcements.

Grade Option Change (if applicable):

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal:

Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw. Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

Student Conduct Code:

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community. As a student at the University you are expected adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see:

http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities.

Use of Personal Electronic Devices in the Classroom:

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference:
<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Scholastic Dishonesty:

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:
<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty:
<http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences:

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Appropriate Student Use of Class Notes and Course Materials:

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering

instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see:
<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Sexual Harassment:

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:
<http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action:

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy:
http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations:

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability>.

Mental Health and Stress Management:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental

health services available on campus via the Student Mental Health Website:
<http://www.mentalhealth.umn.edu>.

The Office of Student Affairs at the University of Minnesota:

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

Academic Freedom and Responsibility: *for courses that do not involve students in research:*

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. [Customize with names and contact information as appropriate for the course/college/campus.]

OR:

Academic Freedom and Responsibility, for courses that involve students in research:

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any

course of study for which they are enrolled.* When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies.

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. [Customize with names and contact information as appropriate for the course/college/campus.]

* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".