

HI5304 Advanced Database Concepts in Health Informatics

Fall, 2015

3 Semester Credit hours

Course Description

Database processing is a key area of competency in biomedical informatics. This course introduces the concepts and methods of database processing in the context of healthcare and biomedicine. Topics covered include developing data models, designing and re-designing databases, implementing databases, SQL, and database web access standards. Advanced topics including ontologies, semantic web, and database applications on biomedical research will also be exposed. By the end of the semester, the students are expected to acquire both theoretical understanding and hands-on experience on database processing and applications

Learning Objectives

Upon successfully completing this course, students will be able to:

- Being able to use basic relational database techniques
- Being able to apply data modeling techniques
- Acquire working knowledge of SQL and database applications
- Explore data warehousing/data mining/Electronic Medical Record
- Ontology and semantic web technology

Prerequisite/Co-requisite

Graduate student, access to computers, and consent of instructor

Textbook

Required Readings

- ***Required Readings*** Kreme, David & Auer, David (2012). Database Processing: Fundamentals, Design, and Implementation, 12/E. Prentice Hall. ISBN: 978-0-13-214537-4.
*Note: 13/E is being evaluated. Feel free to use it if you have a copy.
- Companion Website: http://wps.prenhall.com/bp_kroenke_database_12/

Recommended Readings

- Elmasri, Ramez and Navathe, Shamkant (1999) Fundamentals of Database Systems, Third Edition, Addison-Wesley Publishing Company, ISBN: 0805317554
- Allemang, D. & Hendler J. (2011) Semantic Web for the Working Ontologist, Second Edition: Effective Modeling in RDFS and OWL. ISBN: 0123859654
- Redmond E. & Wilson J. (2012) Seven Databases in Seven Weeks: <http://it-ebooks.info/book/866/>

Instructor Information

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Office Hours: by appointment.

Method of Instruction

This online course is broken down into weekly/topical instructional units. Every week, a new instructional unit will be presented, with each unit containing a combination of the following elements:

- The course is designed to expose you to advanced database concepts and related topics in healthcare and biomedicine.
- Using lectures, demonstrations, and hands-on practice you will develop knowledge and skills necessary to understand, design and implement data models and databases.
- Quiz and homework will be assigned regularly to enhance understanding. Students are also encouraged to carry out individual projects during the course of learning (ideal projects consist of identifying a task in the biomedical informatics area and creating a database system). Each student should complete a term paper in the end of the semester.
- Online proctoring is implemented in each quiz. [Online Proctoring Guidelines for Students](#), [Troubleshooting Procedures for Proctored Online Tests](#) File, and a practice quiz can be found in Course Home Page. Each student must read the two documents carefully and follow the guidance linked there. Before starting your first remotely proctored quiz, make sure you have taken the practice quiz

and had a clear understanding of online proctoring. It is your responsibility to make sure you meet all the hardware and software requirements.

The instructional materials and activities for this course reside in Canvas, a Learning Management System (LMS). You can log into Canvas using your UTH credentials at <https://uth.instructure.com/login/1>

The activities for each week should take you about 6 to 9 hours depending on your study skills and previous experience with graduate education, technology, on-line learning and Canvas. Dedicate at least 3 hours each week on the current assignment and 3 to 6 hours of work outside of the course each week.

It is expected that you will access the course on a regular basis. As the course progresses you will get a better sense for how frequently you need to access the course site to complete and submit the assignments and meet the course objectives. Canvas monitors your access and activities in the course and the course instructor may contact you if you do not access and make reasonable progress in the course over a period of time.

Successful course completion requires having access to the current course resources and materials, reading the course materials, actively participating in learning activities such as discussions, group projects and completing all assignments, quizzes and exams. Completing all the assignments is required in order to receive a course grade.

The instructor will respond to student emails, monitor student progress and answer questions posted on the discussion forums, and send out weekly announcements or emails to the class.

It is your responsibility to check your UTH e-mail account regularly (at least weekly) to make sure you receive announcements and information sent out by your instructor and TA.

Instructions and expectations (rubrics) are provided for assignments and grading throughout the course. A rubric is an explicit set of criteria used for assessing a particular type of work or performance and usually includes levels of potential achievement for each criterion. A rubric may be used to indicate what should be included on an assignment and the elements that will be graded. It is critical for your success in this course to align your effort with the criteria in the rubrics when working on the assignments.

Grading

The following evaluation criterion will be used for determining your grade for this course. Letter grades will be assigned based on the percentage of total points received (e.g., 90-100% =A, 80-89%=B, 70-79%=C, <60=F, and I (Incomplete)). An Incomplete is given only when situations outside of the student's control occur. School policy mandates that an Incomplete must be completed by the end of the following semester. An Incomplete that is not completed by the end of the next semester will turn into an F automatically.

Your final class grade will largely be based on the results of all the assignments and activities (e.g., online discussions, quizzes, and completion of course project) that are designed to reflect your understanding of the course content. Finishing all the assigned readings, assignments, and activities **on time** will help you to achieve the objectives for this course. Late submissions will incur penalties and affect your final grade.

Requirements	Percentage of Total Points
Quizzes	20%
Assignments	30%
Term Paper (Final)	40%
Term Paper assignments 1-2	10%
Total	100%

Note: Poster day (symposium) will be held Dec. 14, 2015

Student Feedback / Evaluation of Instruction

At the end of the semester, you will be asked to fill out an online "Course and Instructor Evaluation" survey.

Instructors do not receive the aggregated results until all grading is done and course grades are submitted.

Instructors do not have access to the identity of the survey participants when they view the survey results.

Please take time to finish the evaluation survey since it is helpful to evaluate the instruction and provide for revisions of future course offerings.

Your feedback is encouraged throughout the course and is always welcomed.

Technical Requirements and Support

This course requires the use of the online resources provided in Canvas, our learning management system.

Please make sure that your computer meets the minimum [hardware and software requirements provided at this link](#). Additional instructions may be provided in the course for accessing other technologies if needed.

Students must have the latest version of their operating system installed including latest security updates and service packs. SBMI recommends installing and using the following anti spyware, malware and virus control software:

- For real time protection:
 - Microsoft Security Essentials
<http://www.microsoft.com/security/pc-security/microsoft-security-essentials.aspx>
 - BitDefender Antivirus Free Edition
<http://www.bitdefender.com/solutions/free.html>
 - AVG
<http://free.avg.com/>
- Other malware removal tools:
 - Malwarebytes Anti-Malware
<https://www.malwarebytes.org/free/>
 - Panda Cloud Cleaner
<http://pandacloudcleaner.pandasecurity.com/>

Students are required to have access to the following for accessing course materials and to complete course activities:

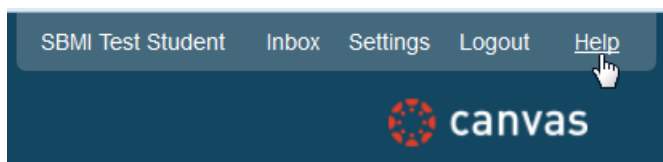
- [Stable high-speed internet](#)
- Personal computer

This course may also require:

- Webcam for proctoring of online quizzes and exams
- Headsets with microphones for voice chatting

Troubleshooting procedures for educational technologies:

- In case of technical difficulties with proctored quizzes and exams, follow the troubleshooting procedures provided to you in the course and inform the instructor and the TA.
- For Canvas related questions, use the Help button located in the upper right corner in Canvas to email, chat or call for help. Canvas provides dedicated support to UTH users 24 hours a day, 7 days a week.



- You can direct all other technology related questions to the Distance Education Team (de@uth.tmc.edu). Currently, Distance Education Team is able to provide technical support only during business hours US Central Standard Time. Requests submitted after 5pm CST may take until the next business day to resolve. Please plan accordingly for time critical activities such as quizzes, exams, and submission dates for assignments.

In the online learning realm, trying to do things last minute is a sure way to fail and miss deadlines. It is your responsibility to allocate enough time to complete online course activities on time.

Policies

Excused Absence on Holy Days

Students who wish to observe a religious holy day that interferes with classes, examinations or completion of assignments, must inform the instructor of each class to be missed and/or of the planned absence(s) not later than the fifteenth day of the semester. The notification must be in writing and may either be delivered by the student personally to each instructor, with receipt of the notification acknowledged and dated by each instructor, or mailed by certified mail, return receipt requested, to each

instructor. The full policy can be found at:
<http://www.uth.edu/hoop/policy.htm?id=1448072>

Academic Honesty

Academic honesty is the cornerstone of the academic integrity of a university. It is the foundation upon which the student builds personal integrity and establishes a standard of personal behavior. Because honesty and integrity are such important factors, you should be aware that failure to perform within the bounds of these ethical standards is sufficient grounds to receive a grade of "F" in this course and be recommended for suspension from the SBMI.

You should submit only your own work unless group work is indicated in your assignment. To demonstrate academic honesty, you should always indicate the use of works other than your own. Plagiarism is prohibited. Remember that most instances of plagiarism can be avoided by simply citing the source for the material that is used and thus indicating that it is not your original material. Plagiarism may include

- words or ideas taken from someone else without acknowledgment
- giving incorrect information about the source
- changing the sequence or structure but using ideas without citation
- not including material in quotes if directly taken from someone else's material and/or copying amounts of other's material and using it in violation of fair use copyright laws

With the advent of the Web and access to materials, the need to guard against using other's material without acknowledgment is especially important. So, when in doubt, cite. Prevention is the best deterrent and thus avoids the academic consequences that may follow.

Per the [Exam and Written Paper Monitoring Policy](#), your submitted work may be subject to evaluation from [Turnitin](#) for plagiarism and some courses may require the use of [Proctorio](#), an online proctoring software that will monitor and record you when you take online quizzes and exams.

Refer to the Student handbook [Student Conduct and Discipline](#) concerning plagiarism at <https://sbmi.uth.edu/current-students/student-handbook/unacceptable-conduct.htm>. More information regarding plagiarism and unacceptable conduct may be found at: [HOOP Student Conduct and Discipline](#) and <http://www.uth.edu/hoop/186-appendix-a.htm>. If

you have questions or need additional information please let your instructor(s) know.

Copyright Policy

Information on copyright policy issues may be found at: [HOOP Classroom and Research use of Copyrighted Material](#).

Intellectual Property

Information on intellectual property issues may be found at: [HOOP Intellectual Property](#).

All materials presented in a course in Canvas are copyright protected unless otherwise noted.

Course Accommodation

Course accommodations are made in response to individual requests for accommodation. If you need accommodation please let your instructor(s) know. Information on disability issues may be found at: [HOOP Disability Accommodation](#).

If you believe you have a disability requiring an accommodation, please contact Dr. Susan Fenton, Associate Dean for Academic Affairs at (713) 500-3591 or by email at Susan.H.Fenton@uth.tmc.edu.

For additional information, contact Renee Williams, Equal opportunity Admin at (713) 500-3416, or by e-mail at Renee.Williams @ uth.tmc.edu.