ICOM 5016 – Database Systems

“Rules of the Game” - Fall 2014

IMPORTANT NOTE
Read carefully this reference as soon as you get it! It contains the “rules of the game”. Ignorance of the rules is no excuse for breaking them.

Instructor

Amirhossein Chinaei, Ph. D.
WWW: http://www.ece.uprm.edu/~ahchinaei
Office: OF-326
E-mail: ahchinaei@ece.uprm.edu

Office hours: Tuesdays, Thursdays: 1:15PM-3:15PM, Wednesdays: 8:00AM-10:00AM or by email appointment

TA

Orlando Xavier Nieves
Office: TBA
E-mail: orlando.nieves4@upr.edu

Office hours: Wednesdays 10:00-12:00 or by email appointment

Course Syllabus

Introduction to database management systems, with emphasis on relational database design and application development. Study of entity-relationship model, relational model, object-oriented model and object-relational model. Techniques for database design: ER modeling, UML modeling, ER to relational mappings, functional dependencies, and normalization. Discussion of structured query language (SQL), Applications servers and DBMS, XML, XPath, XQuery, and web applications. Introduction to JSON, OLAP, and NOSQL. Introduction to transaction processing and database recovery. Overview of DBMS implementation techniques: storage management, indexing and access methods, query evaluation and optimization.

Prerequisites

ICOM 4035 (Data Structures) or equivalent.

Proficiency with C/C++, Java, web programming, Windows, and UNIX

Lectures

Tuesday/Thursday 9:00-10:15 AM, Location: S-113
Course Credits
3 credits

Course Website
The course will have a website holding many useful resources to help you throughout the course. Some important information will be posted in the course page. It is important that you check the course website frequently and at least once before each lecture day. We try to make an effort to keep the website updated and working; please inform the instructor when you detect any problems with the website, if any, immediately.
URL: http://www.ece.uprm.edu/~ahchinaei/courses/2014sep/icom5016/index.html

Email
Email will be an essential means of communication between students and course staff during the term. Important classroom items are communicated via email. Every student is expected to have an email account on upr.edu or uprm.edu machines.

Assignment 1: Please send the instructor your email address today (not later than August 15, 2012) with the following information:

- Email subject: ICOM5016; your name; your student ID; your telephone number
- Email body: I have no conflict with the exams announced in the course page.
- Attachment: A PDF file containing answers to the questions asked in class on Aug 14.

* Make sure to state “ICOM5016” as part of your email subject in all your emails to the course staff.
* Do not send your emails in html format; only use text-only emails (exclude signature files too.)
* You could send PDF attachments as well; only PDF (convert other formats to PDF.)
* You are assumed to check your email at least once in every 24 hours.

Textbook & References

* Database System Concepts, 5th Edition
  Silberschatz, Korth, and Sudarshan

* Database Management Systems, 3rd edition
  Ramakrishnan, Gherke

* Core Servlets and JavaServer Pages, Vol. 1: Core Technologies, 2nd Edition
  Marty Hall and Larry Brown

* WebSphere Studio Application Developer, Version 5 Programming Guide
  Ueli Wahli, Ian Brown, Fabio Ferraz, Maik Schumacher and Henrik Sjostrand

Free IBM Redbook at:

Office Hours
The course staff holds weekly office hours (the professor: Tuesdays & Thursdays from 1:15 to 3:15; Wednesday 8:00-10:00 and the TA: Wednesdays from 10:00 to 12:00). This is an excellent opportunity to go over the material discussed in class on a one-to-one basis and at an individual pace. Unfortunately, some students—who
can greatly benefit from this opportunity—seldom go to the office hours before their doubts have accumulated to the point where it becomes very hard to keep up with the course.

In general, near the end of the semester, professors get some students complaints about the difficulty of some concepts and their inability to keep up with the course. Such complaints seldom come from students who have frequently attended office hours.

**Hence, if you have any doubts on a concept discussed in class, please use this important resource—and see the professor immediately.**

**Course Evaluation**

Your grade will be based on the scores that you obtain in class assignments, partial exams, and a final exam. The weights assigned to each of these categories are as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>30%</td>
</tr>
<tr>
<td>Partial exams</td>
<td>45 %</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
</tr>
<tr>
<td>Optional Assignments</td>
<td>Up to 10%</td>
</tr>
<tr>
<td>Total</td>
<td>Up to 110 %</td>
</tr>
<tr>
<td>Absent or being 5 minutes late in each lecture</td>
<td>-2 %</td>
</tr>
</tbody>
</table>

Your total score will be calculated as a weighted average of your average scores in each category.

** Each partial exam will carry the same weight within its corresponding category.

** There are many optional assignments and each may have a different mark. Furthermore, assignments will be graded <on a random basis> and will not return to students. Individual marks in each assignment will not be announced; instead, its total will be added to your total score automatically by end of semester. Since the volume of assignments is heavy and it will be graded on random basis, the course staff does not accept any request from students to see their graded assignments. However, since assignments are optional and there are many of them, we believe the overall grading will be fair to all students.

*** NOTE: In order to pass the course, you must meet all of the following 4 requirements:

1. You must achieve at least 50% of average of partial exams score,
2. You must achieve at least 50% of the final exam,
3. You must completely deliver Phase IV and V of the project,
4. Your total grade (partial exams, final exam, projects and assignments) must be at least 70% ,

** Your final grade will be determined by a standard curve as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(90,∞)</td>
</tr>
<tr>
<td>B</td>
<td>(80,90)</td>
</tr>
<tr>
<td>C</td>
<td>(70,80)</td>
</tr>
<tr>
<td>D</td>
<td>(60,70)</td>
</tr>
<tr>
<td>F</td>
<td>[0, 60)</td>
</tr>
</tbody>
</table>

Students are expected to provide the best possible solution to assignments and partial and final exam questions in order to get full credit. We will not only evaluate correctness; we will evaluate quality as well. Students will have ten (10) working days after their graded work is returned to them to make any claims about incorrect grading of the exams. No further claims will be considered after this time.
Final Exam

A comprehensive final exam will be administered at the time and date determined by the UPRM Registrar. The exam carries a weight of 25% towards your final score. The registrar usually announces the date for the exam several weeks in advance.

Partial Exams

We will have three up-to-75-minute partial exams on the following dates and times:

- September 4 at 9:00 AM (Partial Exam 1)
- October 09 at 9:00 AM (Partial Exam 2)
- November 13 at 9:00 AM (Partial Exam 3)

- Each exam will cover materials up to and including the material covered before the date of the exam. However, emphasis will be placed on the material discussed but not tested by previous exams.
- You are responsible for planning ahead of time. Having other exams the same day is no excuse for changing the dates or writing an alternative exam.
- Attending partial exams is a requirement of this course. If you miss an exam, you will get 0 for that exam. Missing two exams would be reason enough to fail the course. (Certain exceptions may be made only for emergency cases.)
- Students must work individually on all exams (and assignments). You will find more on this requirement in the Academic Integrity Section of this document (below).

Term Project

In this course, you will be required to complete a term project, consisting on the design and implementation of full-fledged database application. Specifically, you will build a Web-based application of your choice. More details will be given during the second week of the course.

You will start working in teams of exactly three students. The project will constitute 30% of your final grade. The project will be completed in five phases, and each phase will have the following weight on the final term project grade:

- Phase I: Form your team, choose a project title, provide examples—2%
- Phase II: Write the project description, draw the interface—8%
- Phase III: E-R Modeling and Web Design—25%
- Phase IV: Relational Design and Implementation—25%
- Phase V: Operational System and Final Report—40%

Each team must conduct about 3 presentations related to the approaches they have taken in each phase of the project. Each presentation will be counted in grading your project. All team members should participate in the presentations.

Each phase of the project will be graded on an interview at the professor’s office (The due dates and interviews will be announced during the semester.) At this interview, your code will be compiled, tested, and run. In addition, you will be asked questions about the structure and functionality of your code. All groups must submit a CD with the code and documentation for each phase of the term project. Students in groups that do not submit the materials for one of the phases will automatically receive a grade of F in the class. All groups MUST submit working Phases IV & V to receive grade in the class. Students in groups that do not submit working Phases IV or V will automatically receive a grade of F in the class. A working Phase V is a project that completes and generates the output for the set of tasks for Phases III & IV to be specified in the project description document (in Phases I & II).

Each project phase will be graded following a scheme that counts the group effort as well as your individual effort. At each interview, the project will be tested for functionality, and a score between 0 and 85 will be given
to it. Then, you will be asked certain questions about the overall project functionality, and also about the specific parts you worked on. You will get between 0 and 15 points for these questions. Thus, the total points for each phase will be 100. Since this is a group project, it is important for each group member to contribute fairly to the effort needed to complete the project. Hence, your score for each phase of the project will be multiplied by a weight factor to obtain your final score for each phase. This weight factor will capture your effort in helping complete the project phase. The weight factor will be computed from the average effort score that each one of your peer group members will give you as well as with what the course staff observe about your efforts. Each student will provide an effort score to the other members of the group. **This process will be confidential, and none will know the specific effort scores that a student gives to other students.** The value of the effort score runs between 0 and 10, with 0 indicating no effort, and 10 indicating full participation. For each student, the average of the effort scores will be computed, and then divided by 10 to obtain the weight factor to be used in computing the final score for a given project phase. The following example should help clarify this whole process. Suppose that the group of student Ann Diaz obtained an initial score of 90 for Phase III of the project. The two peers did all the work, and Ann Diaz simply wrote the report the night before the due date. The two peers of Ann Diaz gave her the following effort scores: 4 and 3. Then, Ann Diaz final score in the Phase III of the project is computed as follows. First the average of the effort scores, 4 and 3, is obtained, yielding a value of 3.5. This value is divided by 10, to obtain the weight factor which is 0.35. Then, the final score for Ann Diaz for Phase III will be 0.35 x 90, which equals 32. Notice that the lack of effort dropped Ann from 90 to 32! As you can see, students that do not work on the project will receive a poor score. Hence, each group member must take an active role in making the project a success.

**Changes to this Reference**

These “rules of the Game” may suffer some informational minor changes during the course of the semester. However, major changes will require a special procedure in order to get approved. The final decision will be made within votes, but all students will be notified at least 24 working hours in advance about such an impending decision via email so as to give everyone an opportunity to attend and vote. Major changes may only be approved with the written consent of the professor and at least 90% of the students who vote.

**Students with Disabilities**

If you believe that you are at a disadvantage against other students due to a physical or mental difficulty, please contact the professor individually and immediately so that some reasonable accommodation can be made to attempt to circumvent or ameliorate the difficulty. It is not only our desire and duty but it is also your right as established by the 1990 Americans with Disabilities Act. Learn about your rights and demand them.

**Academic Integrity**

- The usual university policies on academic honesty, fair use of computing facilities, etc., apply by default.
- Each student is expected to work individually on all projects, exams and laboratory assignments. You may not share your answers to the laboratory assignments. You may not use code from another student, or code that you find on the Internet or any similar resources. You may not share your code with another student or group. Failure to comply with these requirements will result in a grade of F in the course for the all student(s) breaking these rules. Unauthorized group efforts, particularly during exams, will be considered academic dishonesty and the students involved will receive an F in the course. You should read Article 10 of the “Reglamento General de Estudiantes de la Universidad de Puerto Rico” to learn more about the possible sanctions that you might experience if caught in an act of academic dishonesty.
- Moreover, if a student plagiarizes in one assignment, not only they will get 0 in that assignment but also they will lose 80% of their total bonus score. If the student plagiarizes for the second time, they will get an F in the course.
- Furthermore, students must attend on time for all classes and exams; and, phones must be turned off during the lectures and labs. If you need to have your phone on in a particular lecture due to expecting
an important call, please send the instructor an email in advance for that particular day; and, when received the consent for that particular day, please have your phone on vibration mode. During lectures, students are allowed to use their laptops, only towards the materials being taught. Students using laptops in class should sit in the front row.

- Last but not least, notice that **we share the air**: wearing excessive perfume could be toxic to some others in classroom. Furthermore, if you like smoking, that is your choice, but I do not want to be a 2nd hand smoker.