This syllabus is subject to change at the discretion of the instructor. Students will be notified and are responsible for any changes that are announced in class or via the class web site.

MIS 370 Data Base Design and Development

Instructor: Dr. Grant  Meeting time: Wednesday 6:00 – 9:15 pm

Office Hours: Before class or by Appointment.
Office: DPC RM 6023  Phone: 312 362-6635  Fax 362-6208
Email: dgrant2@depaul.edu
Website: http://fac.comtech.depaul.edu/dgrant2

Student Responsibilities
Students are expected to be prepared for class.
Students are expected to be on time for class.
Students are expected to attend all class sessions and stay for the duration of class.
Students are responsible for delivering assignments on time.
Students are responsible for doing their fair share of work on group projects.
Students are responsible for familiarizing themselves with the syllabus.
Students are responsible for and staying abreast with any subsequent changes to the syllabus.
Students are responsible for printing and carrying a copy of the syllabus.
Students are responsible for providing pencil and eraser on exams or quizzes.
Students are responsible for coming to class prepared.
Students are responsible for signing the attendance sheet.
Students should read the notes pertaining to the HW before doing the home work.
Students are responsible for knowing how to use Microsoft Visio 2003. See file on how to use it
Students are responsible for doing practice problems from each chapter

Course Objectives:
1. Students should be able to create ERD
2. Students should be able to demonstrate 1st, 2nd, and 3rd NF
3. Students should be familiar with database issues and problems
4. Students should be able to create tables in SQL Server 2008
5. Students should be able to create relationships among tables
6. Students should be able to produce reports by writing SQL
7. Students should be able to write basic queries in SQL
8. Students should be familiar with database administration issues

Required Texts:
- Microsoft SQL Server 2008 for Dummies.
I recommend this text over the other one. It is easier to find what you need. The other text has more to offer but it is not so easy to find what you need.

OR

Microsoft Server 2008: A Beginners Guide by Petkovic

May be purchased from DePaul Bookstore, Amazon or Borders Bookstore

Students Class-room Expectations
Students enrolled in ACC or MIS courses are expected to follow the highest level of professional ethics in all of their dealings. Outlined are a set of academic expectations:

1. Students are expected to take significant responsibility for learning, class preparation, delivery of timely assignments, and quality of work.

2. Students are expected to attend class, be punctual, stay for the entire class period, and take breaks only as designated by the professor. Students may get permission in advance from their professor for being late, absent, or leaving early (due to specified circumstances). Students are expected to refrain from disruptive activity during class. For example, cell phones are to be turned off, and student discussions should be conducted only as designated by the professor (typically, for classroom discussions, only one person should be talking at a time).

3. It is considered unethical for a student to seek to influence a grading decision by sharing information with the professor that is outside the stated grading criterion. For example, it would be unethical to notify a professor that a student needs a specific grade or a higher grade for reasons related to employment, reimbursement, or qualification for a scholarship.

4. Students are expected to become conversant with the DePaul University Academic Integrity Policy. That policy is included in the DePaul University Code of Student Responsibility. Students can find the Academic Integrity Policy at:

http://academicintegrity.depaul.edu/

5. Students are expected to represent themselves honestly in all communications, including all aspects of the job search process and scholarship applications.

Based on School of Accountancy & MIS Faculty Discussion in Fall 2012, examples of student classroom behaviors were discussed. Here are examples of classroom behaviors that were cited by faculty as being inappropriate:

- Talking in class when others are speaking
- Sleeping during class
- Excessive focus on grades instead of learning
- Use of laptops/ipads for non-classroom activities
- Cell phones ringing/sound not turned off
- Texting/emailing during class
- Arriving late to class/leaving early from class (unless excused, as per #2 above)
- Missing class and expecting faculty to replicate class material for individual student
- Students taking vacations during regularly scheduled dates of the quarter
- Bargaining/pleading for grades (in order to graduate or get employer reimbursement)
- Expecting curves on exams
- Expecting to told exactly what to study for an exam (just tell me what I need to know for the exam)
- Taking bathroom breaks during exams
- Low motivation for learning when nearing graduation

Grading Policy:
**Grades will be available in D2L.**
Grades will be rounded two one decimal place. Therefore, 92.95 will become 93.0 = A while 92.94 will become 92.9 = A-.  

Final course grade will be determined by:
1. Midterm 35%
2. Exam-II% 30%
3. Assignments 20%
4. DB project 15%

**Quality of work:**
Getting an excellent grade requires high quality work. This includes, but is not limited to the following:
- The use of paragraphs to express each main idea
- The use of a spellchecker
- No typos
- Clear expression and organization of ideas
- Supporting detail for main ideas
- Thoroughness and completeness of the assignment

**How I Grade HW and other Assignments (grading philosophy):**
This section is intended to shed light on what to expect when I grade your work. The intent is to incorporate more objectives measures in the grading process by removing as much subjectivity from the grading process. Grading always involves a measure of subjectivity, and the level of subjectivity varies with the topic and/or subject matter. In analysis and design it is impossible to remove subjectivity entirely because there is no single right or wrong answer to a given business problem. Some parts of a solution are naturally subjective; evaluating the aesthetic beauty or the semantic meaning of a diagram will always be subjective. Any business problem always has a range of possible solutions, some of which are clearly superior or inferior. My job is to determine the correctness of your solution and that is where my subject opinion and expertise play an important and inevitable role in the grading process. There are some parts of the grading process that lend themselves to more objective measures. I recognize that trying to be more objective has some limitations but I also recognize that moving to more objective measures has some merits. My intention is to incorporate more objective measures
into the grading process. However, no matter what approach I take, there are inherent limitations, hence the approach taken here is definitely a compromise yet somewhat imperfect. The upside to adopting a rubric is to make the grading process more transparent and objective. Students know ahead of time how they will be evaluated. When they receive their graded assignments it would be clearer how they were graded especially on specific aspects of their solution (see list below). The down side to this approach is that some errors are more severe than others and I would have liked to reflect that in all aspects of my grading, nevertheless, the rubric captures some of that. The rubric removes some subjectivity by providing a list of errors and their point deductions. Even this approach has some subjectivity built in; determining how many points to deduct is subjective but that is the best one can do. The good thing is that students know the penalty ahead of time.

Here is how you will be evaluated. The deduction is per violation and based on a 100 point scale. Here is a list of point deductions: (this list is likely to grow over time)

- No primary or foreign defined -2
- Missing primary keys -5
- Missing foreign keys -5
- Missing table -7
- Missing fields -2
- Missing relationships -5
- Missing cardinality -2
- Inappropriate or wrong relationship -2
- Inappropriate or poor labeling -2
- Naming violations -2
- Failure to maintain historical accuracy -5
- Missing labels (diagrams title, table names, etc) -2
- Every instance of poor table structure -5 (examples are not limited to, unnecessary use of null values, multi-value attributes, composite attributes, uncontrolled data redundancy, data anomalies, and so on). This list is most likely incomplete.
- Normal form violation -5 per violation
- ERD Diagramming syntax -2
- Business rule violation -5
- SQL code that does not work -1/2 the points
- SQL code that solves the wrong problem -1/2 the points
- SQL code where information not given in the problem is used in the solution -1/2 points (example, using Joe Sample’s SS# when only his name was given to you)
- If the homework consists of two diagrams and you hand in only one, you will be graded out of 50%
- Missing titles or labels on diagrams -2
- Over simplifying of the problem -5
- Syntax or semantic violations not listed above -2

**NOTE:** 25% will be deducted for submitting the wrong diagram and 50% will be deducted for submitting the wrong HW problem. For example, submitting a relational schema when the HW called for a relational diagram will cost you
25%. It is important to provide a list of assumptions with explanation when necessary. Make reasonable and realistic assumptions. Please note that all the rules outlined here will be strictly enforced.

To do well on HW assignments, pay attention to these things:
1. Pay attention to the list of errors above
2. Spend a considerable amount of time researching and understanding the process before you model it
3. Pay strict attention to the syntax
4. Make sure each symbol of the diagram is correctly used and applied
5. Do not try to create the diagram in one attempt; allow time to reread and improve the diagram over several iterations
6. Check for completeness of the diagram
7. Follow directions

Exams
The homework assignments provide the primary means of keeping students informed of their progress during the course of the quarter. Students should use these as a vehicle for judging their strengths and weaknesses. The exam is made-up of multiple choice questions, and problems similar to those in the book and the HW.

When exams are discussed in class, each student MUST return the exam booklet and the answer sheet to the instructor. Students who remove the exam from the classroom have a responsibility to return it and will automatically get a grade of ZERO. Removing the exam from the room is a very serious violation and I don’t take it lightly.

Workload
Students are advised to do all assignments that provide the necessary practice to become familiar with the material. It is unlikely for students to do well in the course without expending sufficient effort and time practicing. Students should plan on spending about 9 hrs per week outside of class. I strongly recommend that students working full-time should not take more than two classes and full-time students should not work more than 20 hrs. Students working full-time and going to school full-time is a recipe for disaster.

Academic Integrity
Students are encouraged to work together. However, students are encouraged to prepare their own work and to refrain from copying the work of others. Students found cheating will receive an F for the course. It is recommended that students familiarize themselves with the university policy on academic integrity.

Make-up Examinations
Make-up examinations are discouraged, and are given only at the discretion of the instructor. Students must notify the instructor at the earliest possible time to be considered for a makeup exam. However, early notification does not guarantee a makeup.

Attendance
Students are allowed to miss one class without penalty. After the first absent, a doctor’s note is required. Two percentage points will be deducted from your final grade for every class missed after the first absent. Students missing classes are responsible for what went on in class and are encouraged to get the class notes and other assignments from fellow students. Missing a class is not an excuse for being uninformed about class materials, assignments, due dates, and so on.

**HW Assignments and Projects**

HW assignments should be handed in at the beginning of class. Make sure to staple all HW assignments. No paper clips please! Assignments not handed in by the end of class are late. No Late assignments will be accepted. However, in exigent and extremely rare circumstances, the instructor reserves the right to apply a reasonable standard. Each student must provide the instructor with a hardcopy of the HW; for multiple copies make sure to staple them. If a student is not attending class (s)he may submit the HW via email when possible. Assignments delivered in person should be dated and time-stamped.

The project MUST be done in Microsoft SQL Server 05 or 07. Remember that NO late projects will be accepted so hand it what you have. If a project is incomplete you MUST submit it to avoid getting a grade of ZERO because no time extensions will be given except for very rare circumstances. To test your project you need to add test data. Do not remove the test data.

**All SQL Server assignments to be graded MUST be done using screen shots ONLY.**

*Make sure you know the difference between a screen shot and a file print command.*

All the necessary content should be visible to the reader. These include tables with all fields showing, relationships, SQL code with results clearly visible, the left pane showing your DB, etc. Points will be deducted for ignoring these results so please make a note of this.

**SQL Server 2008 DB Individual Project**

The project is based on Problem #10 from chapter 6. The idea is to use the DB life cycle to develop a professional solution to the problem in the form of a working SQL Server database. The solution should meet the demands of the current and future needs of the business. It must subscribe to good DB design.

Project Description:

Each student is responsible for his/her project. This is NOT a group project. The idea is to use the DB life cycle to develop a SQL database based on the HW mentioned in the syllabus. Your job is to create a functional database that exemplifies good database design, make sure to consider, among other things, the design issues listed in the normalization chapter. The DB must be in 3NF. Each table must contain at least 10 records but no more than 15. Create 10 reports in SQL.

Your job is to anticipate and create the 10 most useful reports that the business will need to operate on a daily basis. These should be the 10 most important reports needed to run the business successfully. The data you use to test the database must be appropriate. You will lose points if some scenarios can’t be tested properly. Your report should explain those areas where it is important to test certain critical scenarios. If you make any assumptions you need to state them. You will lose points for oversimplifying the problem; in other words, your solution and the assumptions you make should reflect reality.
The report, as a minimum, should include a cover sheet with your name, date, course, professor etc., an assumption page if necessary, a page explaining why you choose each of the 10 reports, the SQL code for each report, the 10 reports, the relational diagram, the ERD, and anything else you see fit to include. Make sure the ERD is complete with all the necessary information. No two students are allowed to have the same data set. Report must include page numbers and a table of contents.

**How Do I intend To Grade the Project:**

I will be looking for these important elements in the project:

1. All the tables with appropriate relationships and keys
2. NF tables
3. The tables have the appropriate data types
4. Reports
5. The SQL for the reports
6. Any queries that are created
7. The appropriate use of referential integrity
8. Appropriate use of test data
9. Design consideration discussed in the book
10. Anything else not covered above

The reports are a very important part of the project. Special attention will be placed on your decision to select reports. It is not enough to just select any set of reports. The idea is to select reports that are most important for running the daily operations of the business. It is strongly recommended that you identify ahead of time as many reports as you can, then prioritize them in order of importance. This should be done before the reports are generated or even before the database is completed. Thinking about the reports you want to create significantly influence the database design. The two primary reasons for a database are to store and produce information for decision making. Therefore, do not wait until the last minute to select reports on the fly. The selection process should be given serious consideration and thought prior to your database design.

**Homework**

HW is due at the beginning of class. Submit it when you come to class even if the instructor forgets to ask for it. Assignments not handed in by the end of class are considered late and will not be accepted and a grade of ZERO will be awarded. However, in exigent and extremely rare circumstances, the instructor reserves the right to apply a reasonable standard. Students may use any means necessary to get assignments in on time. All assignments not delivered in person should be postmarked and time-stamped. All assignments must be done with the aid of the computer. All diagrams MUST be done using Visio and text documents in Word. NO hand written assignments will be accepted; they will be returned to the student and late penalties will apply. When sending assignments via email, make sure to copy yourself and check the incoming email to ensure that the attachment was send correctly. Forgetting to attach your file will not be considered an excuse for late projects or assignments as penalties (grade of zero).
for being late will apply.

The student has a responsibility to demonstrate that (s)he understands the course material. **DO NOT** assume I know the answers to the problems. Instead assume that I know nothing about the subject, and so it is your job to provide clear, concise explanations and examples to the HW problems. It is your responsibility to convince me, without a shadow of a doubt, that you clearly understand the subject matter. If you have to make assumptions, make reasonable and intelligent assumptions and state them clearly. Never use over simplifying or unrealistic assumptions; you will loose points for doing so. All homework assignments should include the name of the sender, course, date, and instructor. This applies to HW or any assignment sent via email. It is not enough to have your name in the email; it must be on the HW.

**NOTE:** When copying figures (diagrams etc.) from SQL Server, **DO NOT** crop the figures. Resizing them is ok but cropping is not. **DO NOT** resize the diagram so that it becomes unreadable. You will be penalized if you ignore these instructions.

When printing diagrams from SQL Server make sure to provide screenshots showing the tables, your account info, etc. I do not want tables only. I must be able to discern the account information on the top of the screen, contents in the right pane, and the contents of the left pane. Information in tables etc. must be clearly visible. See Example below.

**NOTE:** For each HW assignment I may include additional questions to those listed in the book.
**HW1**

Chapter 1 Problem 5:
1. Use SQL Server DB to create the table shown in the figure
2. Identify as many different types of problem listed in the chapter. Use word.
3. Use the DB to see what happens when you perform certain functions on the table. Example, what happens when you delete a specific record from the table?

Deliverables:
1. A list of the different types of problems that are found in the table. Give on example of each. Discussing the same type of problem several times will not earn you extra points.
2. For each problem, explain clearly and precisely what happened or should happen when you perform a certain action on the table
3. Explain/discuss the implications of your action on the data in the table
4. Provide a printed copy of the SQL Server Table you created along with the list and discussion of the problems

NOTE: All explanations and definitions must be in your own words; they cannot be taken verbatim from the text. If they are you will lose points.

**HW2 – Data Models**

Chapter 2:
Define what is meant by a relational schema
Define relationship, explain the types of relationships, and give one example of each type, make sure not to use any example from the book. Examples from the book will not get credit.
Explain the differences and similarities between a relational diagram, a relational schema, and entity relationship diagram (ERD)
Here are four entities, COURSE, ENROLL, CLASS, AND STUDENT. Use SQL Server to implement the database. Add one row of data per table.

Deliverables:
- Printed copy of the definitions, explanation and examples.
- Print a screen-shot of the relational diagram with the relationships and tables clearly visible.
- Identify the type of relationship between the tables
- make sure all relationships are clearly visible

**HW3 – Relational Database Model**

Chapter 3 Problem 1-6:
Use SQL Server to create the tables shown in fig 3.1
Make sure to create the primary and foreign keys
Recreate the table figures in Microsoft Word and answer the questions by filling in the blanks
Do you see any example of full functional dependence in the schema, explain!

Deliverables:
1. Hardcopy of the relational diagram from SQL Server
2. Hardcopy of the answers in word
HW4 – ERM
Practice Problems 6-8 not to be handed in. For practice only!

HW Assignment:
Do Problem #3 from the Problems section of the chapter 4. Remember to use Visio where necessary. Ignore question f; for question e use crows foot and ignore Chen; ignore question c and instead show all connectivity and cardinality. **WARNING:** the solution to the problem is identical to that of a professional team or an amateur league like NCAA. For example, your design should be able to find answers to the following questions: who plays on what team, who coaches which team, the score for each team per game, where the game was played, the number of points a player scored in a given game, the average number of rebounds for a player’s career, what position does a player play, etc. These are just some examples of questions. One or more relationships may not be explicitly mentioned because the DB designer is expected to know these relationships exist. Therefore, you should investigate the relationship between tables to identify this (or these) relationships that may not pop out at you. There is one relationship that most students miss and there are two the some students miss. Let’s see if you could find it/ them. Make sure to include all of the necessary fields to store all of the information for each table. This is a challenging problem; more challenging than it may appear on the surface.

Deliverables:
You are handing in one complete ERD where information from a, b,... e are represented in a single diagram. In summary, it is a DB design where all P-Keys, Fkeys, Fields, connectivities, and cardinalities are shown.

HW5 – Normalization
Do problem 10 from chapter 6. Use the structure shown to create a SQL Server 2008 database in 3NF. Make sure to create the relationships between the tables. **This database assignment will be used for your final project so it’s very important to do the assignment. All late Final projects get ZERO, no excuses!!**

Deliverables:
Print hardcopy of the relational diagram, that is, 3NF tables and their relationships with all primary and foreign keys defined, and the other columns of each table.

HW6 - SQL (see SQL HW link on website)

**Important Instructions for doing the HW:**
To do HW and project you will use SQL Server 2008. To use the server you must download and install the SQL server management studio Express 2008 Client. The Client just gives you access to the SQL server. You will then use the client to log into the SQL DB. The IP address, username, and password for the server will be given to you in class or by email. Do not give the IP address or your account info to anyone.
Two URLs are provided below, one for XP and Vista and one for Windows 7

When you get to the download page make sure to scroll down to read the requirements and the instructions. This is extremely important.

Pay particular attention to the instructions. The 3 apps shown below must be installed before you attempt to install SQL Management Studio Express 2008. If you have a later or more updated version you are fine. Make sure to install the correct version most likely the 32 bit or 64 bit. Most people will have the 32 bit.

1. **Microsoft .Net Framework 3.5 SP1** or newer. To check Use the control panel Add/Remove programs

2. **Windows Installer 4.5** or newer. To Check Type this *msiexec* in the Start Run box and hit return

3. **Windows PowerShell** Newer computers will have the required version, so I suggest ignore downloading it. If it asks for it then click the link.

If these apps are not installed SQL will NOT work and you will have lots of problems going forward. So I strongly suggest that you perform the install ASAP to avoid a late HW penalty of ZERO. Bring problems to my attention ASAP. Waiting until the last minute to get problems resolved will not be an acceptable excuse for late HW. Therefore get the problems resolved early. If you have problems SQL will be available in the Lewis 13th and 14th Floor labs as a last resort.

You will need a Windows PC for this install. Both downloads work Vista, or XP. If you have a 32 bit OS then download the 32 bit, if you’re sure you have a 64 bit PC then use the 64 bit download. If you have a Mac computer this will not work so don’t even waste your time.

The URL to download SQL and related software for XP or Vista:


There are two versions of the software a 32 bit and a 64 bit.

**32 bit**
SQLManagementStudio_x86_ENU.exe 168 MB

**64 bit**
SQLManagementStudio_x64_ENU.exe 176 MB
Make sure to scroll down the page to read the requirements and the instructions.

Pay particular attention to the instructions and follow the 3 suggested steps. Make sure to check that you have these three apps installed before you try to install SQL. If they are not installed SQL will NOT work and you will have lots of problems going forward. Please do not ignore what I just said! I strongly suggest that you perform the install ASAP to avoid a late HW penalty of ZERO. Bring problems to my attention ASAP. Waiting until the last minute to get problems resolved will not be an acceptable excuse for late HW. Therefore get the problems resolved early. If you have problems SQL will be available in the Lewis 13th and 14th Floor labs just in case you have a problem.

You will need a Windows PC for this install. Both downloads works with Windows 7, Vista, or XP. If you have a 32 bit PC which most people have then use the 32 bit download, if you’re sure you have a 64 bit PC then use the 64 bit download. If you have a Mac computer this will not work so don’t even waste your time.

**NOTE:**
During the installation of SQL you will see a screen named **SQL Server Installation Center**. On the left side you will see Planning, select it and check to see if your PC meets the H/Software requirements. Also select the System Configuration Center link to see if there are potential issues with your install. Any issues most likely need to be resolved.

**The URL to download SQL and related software for Windows 7:**


**The URL to download SQL and related software for Windows 8:**


There are a lot of files in there, the one we need to install is:
- ENU\x64\SQLManagementStudio_x64_ENU.exe for 64bit Windows
- ENU\x86\SQLManagementStudio_x86_ENU.exe for 32bit Windows

**Installation Video SQL 2008:**

http://www.youtube.com/watch?v=0y0gvg-YNdg

**NOTE:**
When installing SQL on a PC with Windows 7 you must right mouse on the file and select **Run As Administrator. This means that you must be logged in as the administrator or your account must have administrator privileges.**

**NOTE: Excellent Resource for software videos:**
There is a site called Lynda.com where you can find videos on various software including (SQL, Visio, Excel, etc). Type in lynda.com in your browser then select the login icon top right, then you will see the screen below. Use your DePaul acct to login using the option on the right by typing in **www.depaul.edu** follow the instructions to get to Lynda. Search for the software you
want to learn.
Class Schedule:

NOTES:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1</td>
<td>Introduction File Systems and Databases</td>
<td>chap 1,2</td>
</tr>
</tbody>
</table>
| 4/8  | Relational database Model Database Design                           | chap 3, chap 9  
HW1 for Practice |
| 4/15 | Entity Relationship Model (ERM)                                     | chap 4  
HW2 |
| 4/22 | Entity Relationship Model (ERM)                                     | chap 4 |
| 4/29 | Normalization                                                      | chap 6  
HW3 for Practice |
| 5/6  | Normalization                                                      | chap 6  
HW4 |
| 5/13 | **Midterm Exam (1,2,3,9,4,6)**                                      | Chap 7,8  
HW5 for Practice (this is the DB for your final project) |
| 5/20 | SQL                                                                 | Chap 10  
HW6 SQL assignment (do all) |
| 5/27 | Transaction Management & Concurrency Control  
Advanced Data Modeling   | Chap 10  
HW6 SQL assignment (do all) |
| 6/3  | Data Warehouse                                                      | chap 13 (skip 572-577, 582-589)  
chap 15 (skip 672-676, 678-683)  
DB Project |
| 6/10 | Exam-II                                                             |                                 |

**Visio, and Project should be available in DPC Library, and O'Malley 1350.**

Note: for the question and answer session students are responsible for bringing questions to class

**WARNING:**
Do NOT make any changes (addition or deletion) to the systems tables in SQL Server. These tables are required for the successful operation of your database. HW assignments require you to create your own tables.

**FYI:**
If you can’t make changes to your tables and get an error message change the following settings:
Go to tools,
Options,
Database and table designers, and remove the check mark from the:
Prevent saving changes that require table re-creation check-box
Click Ok.