

I General

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|---|--------------------------|
| A. MW 3:30-4:45 | Alb 335 |
| B. Dr. Pendegraft | norman@uidaho.edu |
| C. Office Hours: TR 9:30-11:30 & by appointment | Alb328 208-885-7157 |

I generally read email once per day, so if you have an urgent question, it is probably better to phone or stop by.

II Content

Introduction to database management systems. The emphasis of the course is on developing data management systems useful to the organization. Topics will include data modeling, physical design, SQL, database administration, distributed systems and modern database languages.

III Prerequisite: Bus250, Bus355.

IV Assumed Competencies

- A. Understanding of the Systems Approach, Systems Analysis and Design, CASE, and data structures.
- B. Knowledge of basic business and computer systems, Windows, a 3GL, UNIX, and CASE.
- C. College level communications skills
- D. Significant time commitment
- E. Maturity and a strong desire to learn

V Bibliography

- A. Required texts:
 1. Hoffer, J., M.B. Prescott, and F.R. McFadden, 2005. *Modern Database Management*, 7th ed., Prentice Hall.
- B. Optional:
 1. Koch, George, and Kevin Loney, latest. *Oracle: The Complete Reference*, McGraw Hill.
 2. Gennick, Jonathon, 2002. *Oracle SQL Plus Pocket Reference*, O'Reilly.
 3. Pribly, Bill, et.al., 1999. *Oracle PL/SQL Language Packet Reference*, O'Reilly.
 4. Wall Street Journal
- C. References:
 1. Brusaw, Alred, and Oliu, 1987. *The Business Writer's Handbook*. (or equivalent)

VI Course Evaluation

A. Grading (TENTATIVE)

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|---------------|------------------------------------|
| 1. Homework | 45 |
| 2. Quizzes | 100 (6@20, lowest will be dropped) |
| 3. Final Exam | 150 |
| 4. Project | 100 |

B. The Final Exam will be comprehensive may include essay questions, problems, and a case.

C. Quizzes will not be announced in advance.

D. The project will be broken into milestones, each of which will be graded pass/no pass. Each must be resubmitted until it is graded pass, and they must be done in sequence. Penalties will be assessed for late milestones. Successful completion of the project is necessary to pass the course.

E. Final grade cuts will be made at naturally occurring breaks in the vicinity of (but below) 90%, 80%, 70% etc.

F. In general late work will be accepted and make ups allowed only in the case of documented illness, legal proceedings, or approved University activities, and only if requested in advance (except in the case of emergencies).

VII Other documents: be sure that you have copies of the University Catalog and Time Schedule, and the instructors General Policies. You are assumed to be aware of university policy wrt plagiarism.

VIII Goals and Objectives. (These will be assessed via examination. Some will be assessed via the project.)

A. Upon successful completion of this course, you should be able to:

1. explain what a database is and its purpose in an organization.
2. Give a brief explanation of the four basic DB models.
3. Give a detailed explanation of the relational DB model.
4. Properly formulate SQL queries over 2-3 tables very quickly.
5. Explain the value of the portability of SQL
6. Explain the importance of normalization.
7. Define 1NF-BCNF and explain the reason for each
8. Create an ERD data model for a case.
9. Use the data model to create and normalize a DB design.
10. Use a CASE tool to speed your design
11. Explain the major problems of DB administration and outline solutions.
12. Build an application prototype in a modern relational DBMS.
13. Conduct a small DB project and participate in a large project.
14. Explain some of the problems encountered in group projects

B. You should also:

1. Have improved your technical communications skills. (Writing is probably the most important single skill for an MIS professional.)
2. Be prepared to continue learning about DBMS.
3. Have experienced some of the joys and problems of working in groups and dealing with customers.

IX Tentative Schedule

	Week Of	Topic	Reading	Problems	Deliverable HW: in class W MS: R 5 pm
1.	Aug	23	Course Intro		
2.		30	SAD Review	1-2	
3.	Sep	6	DB Fundamentals	3	3#3-9, 12-13
4.		13	Data Modeling	4,A	4#2-8,16,18
5.		20	"		
6.		27	Access		HW1a
7.	Oct	04	The Relational Model	5	5#1-7
8.		11	Normalization		MS2
9.		18	SQL / Oracle	7	7#1-9
10.		25	Physical Design	6	6#1-16
11.	Nov	01	SQL / Oracle	8	HW2
12.		08	Relational Algebra		MS3
13.		15	"		HW3
14.		22	Holiday		
15.		29	Ancillary Topics / Catch up	9-15 (TBA)	MS4
16.	Dec	06	"		
17.		13	Final exam: Mon. 13 Dec. 2004, 3:30 pm		

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X Homework assignments:

A. HW 1: Prepare a Personal Time Log. (30)

Use Access to create a personal time log. It should permit you to track your time spent working on multiple projects. For example, in this course you should track time spent working on the team project, time spent on the memos (including this assignment), and time spent studying. Include space to record attendance and the nature of the work in each session. It must also include the names and phone numbers of team members for team projects. (Remember that a person may be a teammate on more than one project!) The data base must also be able to record who is assigned to work on each project with you. Due dates are indicated on the schedule.

Grading will be similar to the project: Unacceptable submissions will be returned and will be due at the NEXT class period with a 1 point penalty. Late submission will incur a 1 point per day penalty. Each milestone must be complete within two weeks of the original due date or it will receive a 0. HINT: Since this is your time log, you DO NOT appear in the database.

Organize each milestone as a memo with attachments. This is an INDIVIDUAL assignment.

- 1) HW1a Design (10 points)
 - (a) Fully normalized design represented with an ERD
 - (b) Explanation: What are the entities? How will this data structure solve the problem?
- 2) HW1b ACCESS implementation (10 points)
 - (a) Explanation of any changes from 1a.
 - (b) Print out of "RELATIONSHIP" screen showing tables and relationships
 - (c) Sample data from each table (screen shot of table view OR query). This should all fit on 1 page.
 - (d) ONE Summary Report which MUST list your activities for A project. Show for each activity: Date, start time, duration, location, work accomplished, and who attended besides yourself. Show the total amount of time you spent on the project. Grading will consider the esthetics of this report, so make it neat and SHORT.
 - (e) Show the DESIGN VIEW of Query on which the report is based.
- 3) HW1c Time log report for your time spent on the group project. Submit with the Individual Final Report. Should not exceed three pages. Due date: team project final report (5 points)

XI Homework

A. HW 2: This assignment will be graded as submitted.

1. (10) Use Oracle to implement the Pine Valley Furniture database (see page 293). Create one or more SQL scripts to do the work. Submit the scripts and generated output. Do a select * for each table to show the data.

B. HW 3: This assignment will be graded as submitted.

1. (10) Write SQL queries to answer the questions 10-19 in chapter 7. Submit as for previous. HIGHLIGHT each question header. There are typos in the text, so note the following changes
 - 1) In 11 try to add 100,000 rather than 10,000 units.
 - 2) In 13a substitute "product lines" for "work centers". Do not do 13b
 - 3) In 14 substitute "ash" for "oak".
 - 4) In 17 substitute "customers" for "employees" and "names" for "last names"
 - 5) In 18 determine the customers who ordered in November 2004.
 - 6) REMEMBER: each query must be based on only on knowledge of the data structure and the data in the query.

XII Semester Project: Table of Contents

- 1) Project Description
- 2) Project Management
- 3) Evaluation
- 4) Milestone Due dates
- 5) Milestone Requirements
- 6) Cover / Grading sheet

A. Project Description

1. Select a project of your own. It must be a *real* project. This means that it must present sufficiently interesting database issues and must be large enough in scope to justify the team size you select. Further, it must make a difference to someone with a real business problem. Be sure to check with me first. I encourage you to ask questions at any time during the project.

B. Project Management

1. You may select teams of at least four and no more than five subject to instructor approval.
2. Like many actual projects, ours will be divided into milestones. There will be penalties for late milestones. The project will have an absolute deadline that you must meet or your ENTIRE team will fail the course.
3. Since it is possible that not all team members will pull their fair share of the load, you may also provide reasonable penalties in your team charter. You will be asked to submit confidential peer performance variance reports at the end of the project. I reserve the right to adjust individual grades if there is evidence that someone does not carry a fair share of the load.
4. Submit your work in a three-ring binder. Precede each submission with a new coversheet (see attached). Include all previous milestones separated by tab dividers with *the most recent milestones placed on top*. When resubmitting work, *include all previously submitted drafts* of that milestone; include a new cover sheet and any previously returned cover sheets.

C. Evaluation Policies and Tentative Schedule

1. When you submit a milestone, I will review it and will either approve it if it is acceptable or reject it if not, noting problems (not solutions). If the milestone is rejected, you must revise and resubmit it. Resubmissions will be subject to the same review. You must continue working on a milestone until it is acceptable. This is easy to evaluate: either you mastered the skill or you didn't.
2. All milestones must be professionally presented. Incomplete, sloppy, or disorganized work will be returned unapproved.
3. Any milestone submitted after 5:00 PM on its due date will result in a 5 point per day late penalty assessed against each member in the team. Weekends, vacation and grading days do not count. Any milestone submitted early will be treated as if the submission date were the due date (so don't turn them in early for "free" reviews). Late penalties will be subtracted from the 100 points allotted to the project.
4. Milestones must be completed in sequence: if one is delayed the next milestone is still due on schedule.
5. Milestone grading
 - 1) One submission per team per day.
 - 2) Anticipate at least a two-day turnaround. All projects are graded on a first-come, first-served basis.
 - 3) Teams will be allowed to conduct walkthroughs on a time available basis.
6. Documentation
 - 1) All graphics and data dictionaries should be prepared with a CASE tool.
 - 2) Type all other material.
7. University policies with respect to plagiarism will be enforced.

D. Milestone Due Dates are as indicated on the schedule.

E. Milestone minimum requirements

For each milestone supplement your specifications with a written explanation of the rationale behind the design decisions that you made and adequate explanations of each diagram. Organize each milestone appropriately (except where noted, do not blindly follow the order of topics in milestone descriptions).

1. Milestone 1: Team Charter / Project Description
 - 1) Expectations of each other / Meeting times & locations / Communications plan
 - 2) Personal conflict resolution plan. (How will you deal with personality conflicts or unacceptable performance.)
 - 3) Resumes
 - 4) Identify the sponsor.
 - 5) Letter of engagement with sponsor ensuring that the sponsor understands that this is a class project and DOES NOT promise anything else. Confidentiality agreement from each team member.
 - 6) General description of the business problem (including a context diagram).

2. Milestone 2: Requirements / Cost Benefit Analysis
 - 1) Explain the business problem that your system will address.
 - 2) Describe the requirements of the project with
 - (a) Narrative
 - (b) Context diagram
 - (c) Hi Level DFD
 - (d) Preliminary ERD
 - 3) Conduct a cost benefit analysis for full implementation of your project. Assume that the project will be fully implemented using market rates for labor and all new hardware and software.
 - 4) Explain how the proposed system will help solve the business problem you identified.

3. Milestone 3: Design
 - 1) Normalized design with an ERD.
 - 2) De-normalize as needed; justify
 - 3) Conduct a volume and transaction analysis
 - 4) Based on that analysis, identify all views and indices which you will build. (Note: the transaction analysis and VIEWS should be consistent with your DFD.)
 - 5) Create a data dictionary defining all objects on the ERD (Entities and their Attributes).

4. Milestone 4: Oracle Prototype.
 - 1) Document your final design (Table Definitions).
 - 2) Implement your design in Oracle (including loading with dummy data).
 - 3) Fully document your implementation with printouts of data, scripts, queries etc.
 - 4) Create and demonstrate appropriate roles.
 - 5) Create a report with a start file.
 - 6) Justify, create, document, and demonstrate a cursor
 - 7) Justify, create, document, and demonstrate a trigger

5. Milestone 5: Final Report

1) INDIVIDUAL:

(a) Prepare a one page memo organized as follows:

(a) What did you do on the project? (Document with your individual time log.)

(b) What did you learn from the project?

(b) Individual time log

(c) Optional: (as needed) Team member variance report: Did any of your teammates do exceptionally well (or poorly) in a way that should affect their grades? Give as much detail as possible.

2) GROUP: Write a technical report (not exceeding 40 pages in total) to fully document your project. Organize as shown below:

(a) Transmittal Letter

(b) Title Page

(c) Front matter

(c) Executive summary

(d) Table of contents

(e) Letter of Engagement

(f) Copy of your thank you note to your sponsor

(g) Customer letter acknowledging the presentation and commenting on the adequacy of the design.

(d) Body of Report

(h) Introduction:

(i) Purpose and scope of the project

(ii) CBA and recommendations

(i) System specifications (at minimum)

(i) Process Models

(ii) Data Model

(iii) DB Schema (including views)

(iv) Prototype examples (Schema, indices, forms, reports etc.)

(e) Back matter (As needed)

(j) Glossary

(k) Exhibits

(l) Keys to reading diagrams

(m) Team description

6. Milestone 6: Presentation (will be scheduled only if time permits)

1) Present your design to the class and to your business sponsor.

2) Demonstrate a clear understanding of the business and its problems.

3) Demonstrate mastery of a solution.

Submission Cover Sheet and Instructor Evaluation

Submission Date: _____

Time: _____

To: Professor Pendegraft

From: Team # ____

We submit milestone ____ for your evaluation.

- Resubmission
- We have included all previous milestones and coversheets.
- We have carefully checked our work for completeness.
- We have carefully proofread our work.
- Our milestone contains the following additional documentation:

Signed _____ for team _____.

INSTRUCTOR'S EVALUATION

Date: _____

Time _____

Milestone acceptable as submitted.

Milestone not acceptable

Due Date	Submission Date	Date Previous submission was returned	Penalty	Cumulative Penalty to date