Dr. Stefan Brass
School of Information Sciences
University of Pittsburgh

January 5, 2000

INFSCI 2710 "Database Management"
— Syllabus —

Course Data

Course Title:	INFSCI 2710 "Database Management"
CRN:	20727
Class:	Wednesdays, 6^{00} PM – 8^{50} PM, Crawford Hall, Room 169
Web Page:	`http://www2.sis.pitt.edu/~sbrass/db00_2/`
Instructor:	Dr. Stefan Brass
Phone:	(412) 624-9404 (Office), (412) 683-1392 (Home, 8^{00} AM – 10^{00} PM)
Email:	`sbclass@sis.pitt.edu`
Office:	Room 726, IS Building (135 N. Bellefield Ave.)
Office Hours:	Monday, 5^{00} PM – 7^{00} PM (and by appointment, not Thursday)
GSA:	Ms. Siripun Sanguansintukul
Email:	`siripun@lis.pitt.edu`
Office:	B203, IS Building (135 N. Bellefield Ave.), 2nd Floor
Office Hours:	Wednesdays, 4^{00} PM – 5^{45} PM

Course Objective

The purpose of this course is to give you fundamental knowledge about database management systems. I want to teach you the most important theoretical concepts, and I want to give you concrete "hands-on" experience with a major relational database management system (Oracle). For me, the most important outcome of this course will be that

- you know the concepts of the relational model and master the standard database language SQL.

Besides that, I also want to teach you

- database design in the entity-relationship model,
- application programming (e.g. C with embedded SQL, PL/SQL, Web interfaces),
- and further functions of a DBMS (e.g. concurrency control, backup & recovery, integrity control, security, indexes).

However, each of these topics would deserve a course in its own.

Course Rationale

Our society is sometimes called an “information society”, and information is often seen as the most valuable asset of companies (besides their employees, of course, but the employees are also valuable because of their knowledge, skills, and experience).

An important part of this information is kept in databases. Databases are used nearly everywhere, and it will be very unlikely that you will not have to work in one way or another with databases.

This course will not be able to tell you everything what you have to know about databases for a professional career in the information technology field. However, it should give you a solid fundament so that you feel well prepared for smaller applications and further study.

Course Outline (Plan, Subject to Changes)

1. January 5: Introduction (Functions of Database Management Systems)
2. January 12: Basics of SQL, Entity Relationship Model
3. January 19: Advanced ER-Constructs, More on Database Design
4. January 26: Relational Data Model I (Relational Algebra, Constraints)
5. February 2: Relational Data Model II (Translation ER $\rightarrow$ RM, Normal Forms)
6. February 9: SQL I
7. February 16: SQL II
8. February 23: Midterm Exam
9. March 1: Repetition, SQL III, QBE

– March 8: No class. Spring Recess.

10. March 15: Data Dictionary, Security, Access Rights.
11. March 22: Views, Constraints, Backup and Recovery.
12. March 29: Concurrency Control, Physical Database Design (Indexes)
13. April 5: Application Programming I (Embedded SQL, PL/SQL, Triggers)
14. April 12: Application Programming II (Web-DB Interfaces)
15. April 19: Outlook, Deductive Databases, Repetition.
16. April 26: Final Exam.

Course Prerequisites

Officially, INFSCI 2610 “Data Structures”, is a prerequisite for this course. We do not need more advanced data structures than arrays and records here (except in the chapter about indexes, where B-trees would be useful).

However, some previous programming experience is essential, preferably in C. C might be required for one homework, but if this is a big problem, there may be a replacement. However, you are supposed to learn PL/SQL in this course, which is similar to Pascal or C. Also, knowing compilers and a programming language is useful for understanding SQL syntax (which is also a special programming language for databases).

It would be good if you knew syntax diagrams or context-free grammars, but I will give a quick repetition in this class.

You should know basic logic, e.g. and, or, and not. Basic set theory (intersection, union, set difference) is also needed.

But most of all, your time is needed. If you are overloaded with other coursework, you will most probably not be successful in this course. How much you learn depends on how much work you invest.

Brief Instructor Bio (Stefan Brass)

PERSONAL INFORMATION

Citizenship:	German
Languages:	German, English, Russian
Family Status:	Married with Nina Brass

EDUCATION

Habilitation:	(Postdoctoral teaching qualification) University of Hannover, 1997.
PhD:	University of Hannover, 1992.
Diploma:	Technical University of Braunschweig, 1988. I studied there Computer Science from 1982 to 1988.

WORK EXPERIENCE

Since 12/1998	Assistant Professor in the Department of Information Science and Telecommunications at the University of Pittsburgh.
1996–1998	Substitute for the vacant full professorship for information systems at the University of Hildesheim, Germany.
1992–1996	“Scientific Assistant” at the University of Hannover, Germany.
1990–1992	Research Assistant at the University of Hannover.
1988–1990	Research Assistant at the University of Dortmund.

RESEARCH INTERESTS

Deductive Databases, World Wide Web Query Languages, XML Query Languages, Logic Programming, Knowledge Representation.

Textbooks

The official textbook for this course is

- Ramez Elmasri / Shamkant B. Navathe:
  Fundamentals of Database Systems, Third Edition.
  Addison Wesley, 1999, ISBN 0-8053-1755-4 (Hardcover), 960 pages.

If you have one of the following textbooks, which were used previously used in this course, you may continue to use them (at your own risk, there may be small problems):

- Avi Silberschatz / Henry Korth / S. Sudarshan:
  Database System Concepts, Third Edition.
  McGraw-Hill, 1998, ISBN 0-07-031086-6, 864 pages.
- Ramez Elmasri / Shamkant B. Navathe:
  Fundamentals of Database Systems, Second Edition.
  Benjamin/Cummings, Addison Wesley, 1994, ISBN 0-8053-1753-8, 873 pages.

In addition, there will be quite extensive class handouts (copies of all transparencies which I use). My transparencies are not based on any of these books in particular. I have used different sources for preparing them (which I list at the beginning of each chapter).

Of course, I will always tell you which chapters the textbooks correspond to the topics we currently treat in this course. And I urge you to read these chapters! This gives you the opportunity to see the things again from a bit different perspective. And only if you look at something from different directions, you can get a three-dimensional image. You should build up your own understanding and opinions, and this requires that you get information from different sources and are a bit critical towards all of them.

It might also be a good idea to buy (and read) another book specifically about Oracle. One example would be

- Rajshekhar Sunderraman: Oracle Programming.
  Addison-Wesley, 1999, ISBN 0-201-61258-5, 304 pages.

Reading List (Elmasri/Navathe, 3rd Edition)

- Chapter 1: Databases and Database Users
- Chapter 2: Database System Concepts and Architecture
- Chapter 3: Data Modeling Using the Entity Relationship Model
- Chapter 4: Enhanced Entity-Relationship and Object Modeling
- Chapter 6: Index Structures for Files

  We will treat this later in the course and only very quickly.

- Chapter 7: The Relational Data Model, Relational Constraints, and the Relational Algebra
- Chapter 8: SQL — The Relational Database Standard
- Chapter 9: ER- and EER-to-Relational Mapping, and Other Relational Languages

  We will probably leave out 9.3 and 9.4, and maybe 9.5. We will treat 9.1 and 9.2 earlier in the course (before SQL).

- Chapter 10: Examples of Relational Database Management Systems: Oracle and Microsoft Access

  It is not yet clear whether we will treat Microsoft Access. We will treat Oracle in more detail than in this book, but we will leave physical parameters and Oracle internal details to INFSCI 2711.

- Chapter 14: Functional Dependencies and Normalization for Relational Databases
- Chapter 17: Database System Architectures and the System Catalog
- Chapter 19: Transaction Processing Concepts
- Chapter 20: Concurrency Control Techniques
- Chapter 21: Database Recovery Techniques
- Chapter 22: Database Security and Authorization
- Chapter 25: Deductive Databases

  We will treat this only if we have time left at the end.

- Section 27.1: Databases on the World Wide Web

Reading List (Elmasri/Navathe, 2nd Edition)

- Chapter 1: Databases and Database Users
- Chapter 2: Database System Concepts and Architecture
- Chapter 3: Data Modeling Using the Entity Relationship Model
- Chapter 5: Index Structures for Files

  We will treat this later in the course and only very quickly.

- Chapter 6: The Relational Data Model and the Relational Algebra
- Chapter 7: SQL — The Relational Database Standard
- Chapter 12: Functional Dependencies and Normalization for Relational Databases

- Chapter 15: The System Catalog

  We will not treat 15.2. The Networl Model is quite old by now (although database management systems based on it are still used in industry).

- Chapter 17: Transaction Processing Concepts
- Chapter 18: Concurrency Control Techniques
- Chapter 19: Recovery Techniques
- Chapter 20: Database Security and Authorization
- Chapter 21: Advanced Data Modeling Concepts

  We will treat this earlier in the course (after Chapter 3).

- Chapter 24: Deductive Databases

  We will treat this only if we have time left at the end.

Reading List (Silberschatz/Korth/Sudarshan, 3rd Edition)

- Chapter 1: Introduction
- Chapter 2: Entity-Relationship Model
- Chapter 3: Relational Model
- Chapter 4: SQL
- Chapter 5: Other Relational Languages

  It is not yet clear whether we will treat this chapter. Query-by-Example (5.1) and Datalog (5.3) would be interesting and useful.

- Chapter 6: Integrity Constraints
- Chapter 7: Relational Database Design

  We will treat only 7.1, 7.2, and 7.3. The remaining sections will probably be covered in INFSCI 2711.

- Chapter 11: Indexing and Hashing

  We will treat this only quickly, and especially not cover Hashing. Physical design will be studied in much more detail in INFSCI 2711.

- Chapter 13: Transactions
- Chapter 14: Concurrency Control

- Chapter 15: Recovery System
- Section 19.1: Security and Integrity
- Section 21.10: The World Wide Web

Class Attendance

I do not check whether each student attends the class (although I might notice it when I distribute the homeworks). You do not have to excuse yourself if you cannot come to a specific class meeting. I will make all the handouts and homeworks available on the web.

However, I believe that the discussions in class and the small exercises we do together are very useful learning aids. There may also be important announcements which you miss if you do not come to the class. I also do not like to explain things again which I explained in class if you were not there (unless you have a good excuse). On the other hand, I will certainly explain it again if you attended the class, but the previous explanation was not sufficient.

So, in summary, it is in your own interest to attend the classes. However, you do not have to panic if you have to miss a single class meeting, especially if you ask a fellow student to note special announcements and the examples I do on the blackboard.

Oracle Software on the Solaris Machines

It is essential for your success in this course that you really get practical experience with an SQL-DBMS (preferably Oracle).

You will get a user account for the SUN workstations (under UNIX/Solaris) in Room 819 in the IS Building (135 N. Bellefield Ave). You will also get an account for the Oracle software which runs on these machines. Please understand that Oracle authentication is done separately from the UNIX authentication. So it is possible to have two different passwords for Solaris and Oracle. The password for Solaris is changed with the command `nispasswd`, and the password for Oracle with the command `password` (in SQL*Plus).

Appendix A of the class material gives you some information about the most important UNIX/Solaris commands.

The main Oracle interface which we use in this course is SQL*Plus. It is text-based, so you can use a `telnet`-connection to `paradox.sis.pitt.edu` (`136.142.116.28`) in order to do the homeworks. However, it will be difficult to read the Oracle documentation if you have only a telnet connection. If you are directly logged into one of the Solaris machines, you can use the following command to access the Oracle documentation:

```
acroread $ORACLE_HOME/doc/index.pdf &
```

(the manuals interesting for us are listed under “Server”). If you prefer to use a web browser, point it to

```
file:///opt/local/sources/packages/oracle/product/8.0.4/
                                        doc/server.804/index.htm
```

But please note that this is only available locally. We would violate the license agreement if we put the documentation into the web.

“Icarus” and other older SUN machines do not have Oracle installed on them.

Oracle Software on Your PC

As a student of the University of Pittsburgh, you can get Oracle Software through the Software Licensing Services, Bellefied Hall, Room 203 (for non-commerical use). The duplication fee is $5 per CD (plus tax).

For Windows 95/98, you need “Personal Oracle 8.0.4” and about 380 MB disk space. This includes the documentation in HTML format, the Oracle Server, SQL*Plus, SQL Navigator (a graphical browser for the database), some administration tools, and ODBC support. The Precompiler for C with embedded SQL is not included, it is part of “Oracle Programmer” (I am not sure that the Software Licencing Services have this CD).

For Windows NT, you can choose between “Personal Oracle 8.0.4” and the newer “Personal Oracle 8i (8.1.5)”. Oracle 8i has better Java and Web support. Also, it seems that “Oracle Programmer” is on the same CD (although it says that you need a separate license for it). I needed 680 MB disk space for Personal Oracle 8i. The installation script says that you need at least 96 MB RAM and 200 MB swap space. I got it running on a machine with 64 MB RAM (but it is very slow on that machine).

There are many more Oracle software packages which you can get through the Software Licensing Services. E.g. Oracle Developer is interesting and practically useful, although we probably will have no time to look at it in this course. Oracle Designer is a CASE tool for database design. If you are interested in it, read the Appendix D of my course INFSCI 2711 (still in the web). The installation is quite difficult and you must have matching versions of Server and Designer (this may be a problem with Oracle Developer, too). Oracle Enterprise Manager might be interesting for students who want to become a DBA. There are also tools for web interfaces, e.g. the Oracle Application Server and Oracle Web DB. If you don’t like the HTML version of the documentation which comes with Personal Oracle, you can also get a “On-Line Generic Documentation” CD with all the documentation in PDF and HTML format.

If you can’t get a particular Oracle Software package from the Software Licensing Services, you can also get a 30-day trial version directly from Oracle:

`http://oraclestore.oracle.com`.

However, this will cost you $39.95 per CD-pack plus shipping and handling. It used to be only $4.95, but probably too many students have made use of this. Also, no longer all software is available as trial version. You can also download the trial versions for free, but students reported that downloading Personal Oracle over a telephone line takes over 12 hours.

If you don’t have a PC, or your PC doesn’t have enough disk space, you can also use the PC in the Room 819 on which I have installed Personal Oracle 8i and Oracle Designer. I will put more Oracle Software on it during the term. I have left the DBA accounts with the standard passwords so that you can get some DBA experience if you want it. However, if a student destroys the database (which is possible as DBA), I will most probably have no time to reinstall it. I will mention the Windows NT password for the PC in class.

Other Database Software

Oracle is not the only DBMS, although it is the main database system used in this course. IBM DB2 is another important DBMS (fighting with Oracle about the largest market share), and you can get a trial version for free from

`http://www.ibm.com/software/data/db2/udb/`

Other important commercial systems are Microsoft SQL Server, Microsoft Access, Informix, and Sybase. Links to more information are available via the web page of this course. There are also a few systems available with source code, and free for academia, e.g. Mini-SQL, MySQL, and PostgreSQL (see the web page).

Grading

I will compute for every student how many percent of the points in this course he/she has got. Points are distributed as follows:

- 35% for Homeworks. There will be homeworks more or less each week. They can be solved in groups of up to three students. They can also be solved individually, if you prefer that.
- 25/40% for the Midterm Exam. The midterm exam will be written on February 23. Both exams will be “open book”. The better exam weights 40%, the worse one 25%.
- 40/25% for the Final Exam. The final exam will be written on April 26.
- 2% of extra credit for an SQL puzzle which will be announced in the course. It must be solved individually.

- Up to 5% of extra credit for special activities, e.g. class activity (asking questions, volunteering for doing short exercises at the blackboard), finding errors in my handouts, making suggestions for improvements, sending me a short report about your previous work experiences with databases, or information about other database software which we do not treat in the course, etc. If you found an important error in class, please make sure that I know your name, so I can give you the extra credit (e.g. send me later an email). Normally, only the first student who tells me about an error will get extra credit, but there may be exceptions.
- I reserve the right to give some students, who want to improve their score, an extra project. It might also be possible to get first a G grade (incomplete), and then do the extra project in the Summer and have your grade changed afterwards. However, the extra project will be lots of work, so you are probably better off preparing well for the two exams. Also, correcting the extra project is quite some work, so I can give this possibility only to a small number of students (at my own discretion). If an extra project is done, the better exam will be worth 30%, the worse 20%, the homeworks 30%, and the project 20%.
- For students with exceptionally good exams, I may weight both exams 50% and ignore the homework score. However, this will be my own decision and done only in exceptional cases. Basically, the homeworks are an important preparation for the exams, so unless you already know databases very well, it will be a bad idea to skip the homeworks. No extra project will be given if you haven’t done the homworks and then discover that your exam results are bad.

Grades will be assigned based on your total percent score:

- If you get ≥99.0% of the points, you will receive an A+ grade (it counts the same as an A grade for your QPA, but it looks nice on the transcript).
- If you get 90–98% of the points, you will receive an A grade.
- If you get 85–89% of the points, you will receive an A- grade.
- If you get 80–84% of the points, you will receive a B+ grade.
- If you get 75–79% of the points, you will receive a B grade.
- If you get 67–74% of the points, you will receive a B- grade.

I reserve the right to lower these boundaries slightly or change the rules in other ways which improve the grades.

Curving

I do not like curves, because this implies that some students are bound to get bad grades. For a teacher, the nicest thing which can happen is that all students get 90% of the points and therefore deserve an A grade. Then the teacher was obviously very effective.

However, some students were concerned that there is no curve in this course. So I guarantee that

- At least the best 20% of the students will get an A grade.
- The next 15% will get an A- grade (or better).
- The next 20% will get a B+ grade (or better).

Previous results have actually been much better, however, the students said that they found this course very challenging and worked hard.

I don't know what reputation I have, but the reputation I would like to have is “You have to work a lot, you learn a lot, and in the end you get good grades”. Of course, it would be still nicer without the “You have to work a lot”, but in order to learn a lot, you must work. Of course, it is possible to work a lot without learning a lot. And please, if you feel that a homework doesn't give you new insights, I will be happy to talk with you about a more challenging replacement.

Homeworks, Group Work

Through the homeworks there will be some feedback for you as well as for me how far you have understood the material. It is very important that you work yourself on the practical application of what we do here. Only listening and reading is not enough.

The homeworks are an important preparation for the exams. At least part of the exercises in the exams will be somewhat similar to previous homeworks. The exams will mainly focus on practical capabilities, such as writing an SQL query. You need to practice this, for instance through the homeworks.

The homework exercises are not very big, and can be solved individually. However, some students have made very good experience with group work, and you are allowed to submit homeworks in groups of up to three persons. But don't think that this will be less work. It will be more. In successful groups, every member comes to the group meeting already with at least a sketch of a solution, and then you discuss your different solutions. Your grade will depend on the work you invest in this course. If you let the other group members work for you, you will fail in the exams. Please make sure that each and every group member fully understood the solution and the way to get there. I reserve the right to ask every group member for an explanation of the solution of the group.

If you are interested to find possible partners for group work, please send an email to the GSA and specify when you would have time for group meetings. If you like, you can give further information, for instance that you have already previous experience with databases or that you have got very good grades so far. The GSA will then try to make suggestions for students with similar backgrounds if possible.

You can also change groups. We will credit the points for each submission to every group member individually.

Late Homework Policy

Homeworks are normally due in the next week before the lecture. You may submit up to three homeworks in the term one week late. If you violate these limits, you will lose points, or, if it is very late, we might not accept your homework. There may be exceptions if you have very convincing reasons, however, basically you are expected to use your quota of three late homeworks for this purpose.

No homeworks will be accepted in the week of the final exam, so the last possibility to submit homeworks is Thursday, April 20, no later than 6pm. We want to ensure that all homeworks are corrected before the final exam. After the final exam I will be very busy with correcting it and determining the grades. If I still get homework results then, this will create a big chaos.

Homework and Exam Grading

The homeworks will be graded by the GSA, Mrs. Siripun Sanguansintukual. I will grade most exercises in the exams. Please note that the grading in the exams may be a bit stricter than for the homeworks.

It is very important that you understand why points were taken off: Only in this way you can learn from your errors, and it also possible that I and the GSA make errors during the correction of homeworks or exams. So if you have questions, please ask. Also if no points were taken off, but you doubt whether the solution is really correct, please ask. In such cases I will not take points off even if it should turn out that your solution is in fact incorrect.

However, if points were taken off, and you want them back, I reserve the right to re-check also other parts of your solution.

Exams

The exams will be open book: You can use all your notes, the handouts, the textbook, and other books. Since not all students have a laptop/notebook etc, I cannot allow the use of computers during the exam, especially not computers with an SQL DBMS installed on them.

The goal in this course is not memorization, but understanding and practical capabilities. E.g. typical exercises can be to write an SQL query, to design an Entity-Relationship schema, or to translate such a schema into the relational model. This will be similar to previous homeworks. In order to make the correction of the exam simpler, there will also be multiple-choice questions. A typical example would be to decide whether a given SQL query is correct, or whether two given ER-schemas are equivalent. I will make the previous exams (from the Spring and the Summer Term 1999) available to you (actually, you should have got the Spring term exams with this syllabus). Of course, the exam style may change a bit, especially the multiple choice questions will be new.

Please notice that time will be limited in the exam. I do not intend to create a big time pressure, however, you will not have time to read longer parts of the books and the handouts. A book will only be useful during the exam if you read it before and know where to look for something.

Also, some students said that they had problems during the exam, because the feedback from Oracle was missing: In the homeworks they could try again and again until the query produces the expected answer, in the exam you must get it right on the first try. Unfortunately, we cannot do the exam in a room with computers. Also, your future employer can expect that you can write e.g. SQL queries reliably and reasonably fast. Multiple tries will make a bad impression. So please practice enough.

Cheating

Cheating is a serious matter and can have serious consequences, up to the expulsion from the University.

Until recently, I thought that graduate students don’t cheat, and I have been very trusting. However, this belief turned out to have exceptions. Please make sure that we can have a good and trusting relationship in this course. It is not true that if you are not caught, you can do what you want. Also, if you are caught, this will not only create big problems for you, but it will also be a very unpleasant sitution for me, and it will make the life of your fellow students and future students harder.

For homeworks, the rule is that the work should only be authored by the students who submit the homework as a group, and only one copy may be submitted. Do not believe that you act socially if you let other students crib your homework. In this way they lose the chance to learn something by doing the homework themselves. And, consequently, if I detect copied homeworks, I will not ask which is the original and which is the copy, but give both 0 points.

I encourage that you help each other, answer questions other students might have, and maybe sit down together for practicing. This is acting socially and right. Also remember that there is no curve, and I really don’t want you to feel as competitors. It is a basic ethical principle that if you want other people to help you, you must help other people. And we all need help sometimes.

However, you should not let anybody outside your group see your homework (unless that student has done it already himself/herself). You should only help other students find their own solution, and get over specific problems. In this way it should not happen that strange identifiers or very uncommon errors occur in two different solutions.

Correcting homeworks is a time-consuming task. This is another reason why we must protect ourselves against copied homeworks. If you want to build a group of more than three students, we can discuss that. But please make sure that everybody learns how to do it on his/her own (for the exams and the real life).

In the exams, it is very important that you do not create the impression as if you would look on somebody else's exam or even talk or communicate in some other way with anybody else. It may be safer not to sit near to your friends in the exams. If I or the GSA should believe that you have tried to cheat, the typical penalty would be an F grade for the course.

Online Grades Database

In all previous terms, it did happen that we forgot to put a few homework credits in our database. Therefore, we want to give you the possibility to check your current state yourself. In this way, any errors we make can be quickly removed. I want to do the grading as transparently as possible so that you have the feeling that you are treated fairly.

Therefore, I have developed a small web application, which allows you to enter first name, last name and a password, and then shows you your results and some statistics how well you performed in comparison with the other students:

`http://www2.sis.pitt.edu/~sbrass/grades/`

It is the information in this database which I will use to determine the final grades. Please check it regularly, and especially before the final exam, so that all your points are complete. The database will also show you your final grade once I have determined it.

In order to use this service, you must first register. Please do this as soon as possible. There is a big security hole here: We do not check whether the person who registers under your name is really you. This should not be a big problem, because there can be only one registration for each name: So once you registered, your account is locked, and if some hacker has registered before you, you can immediately contact us. The first results will be in the database only in over one week, so by then, all problems should be resolved. Let me emphasize that even if you should not intend to use this service, you must register, or other people may be able to see your results. Also, it is your responsibility to make sure that we do not forget any of your homework points (or extra credit).

I must say that web databases seem to be inherently insecure. It happened more than once that hackers got credit card numbers of customers of online shops. So although we have tried to avoid all known security holes, we cannot guarantee that your homework and exam results are really safe. We refuse any liability for the security of these data.

Also, your password will be sent over the net without encryption. So probably it is safer to use a password which you do not use somewhere else. In the database, it will be stored encrypted. So if you forget your password, we can only assign a new one, but we cannot tell you your password.

If you are really concerned, please contact me. The first measure is to lock your account, so that nobody can access it via the web, but the data is still in the database. We can also try to keep your data completely out of the database, but this creates more work for us and also some inconvenience for you (you cannot check your state and the statistics in this way).

If you find that the points in the database are incorrect or if you have any other problem (e.g. forgot your password), please contact the GSA, Mrs. Siripun Sanguansintukual:

`siripun@lis.pitt.edu`

Only if you detect a bug in the software, contact me (since I am the author). Suggestions for improvements are also welcome.

Questions During Class

I really appreciate if you ask questions during class. To me, this shows that you are interested. Also, without the possibility for you to ask questions, I could be replaced by a book or a video. Finally, it is more interesting for me to answer questions than to go over my prepared course material.

You are also allowed to ask why something is important. I have never felt offended by a question from a student, and I believe that never a student felt offended by my answer.

If you notice that I make an error, please tell me so. I know that I do make errors occasionally, and it is better for everybody if the matter is cleared up. If you find an error in my handouts, you may receive extra credit for this.

It might be a good idea to write down all questions that arise between the lectures (e.g. during the reading assignments). At the beginning of each lecture (and many times in between), I will ask whether there are any questions. You may also interrupt me at any point. Sometimes I may want to delay the answer, but please make sure that I don’t forget about it.

If you do not like to speak in class, you can send me your question via email. However, if the answer is not urgent (e.g. needed for the homeworks), I may answer the question at the beginning of the next lecture instead of writing you a lengthy reply.

I will also normally be available during the break and after the lecture for individual questions. I will do the break normally from about 7^{30} to about 7^{45}, but there may be some variation in order to finish a section. Please understand that I cannot extend the break to answer more questions: Students have critized that sometimes I took more time for the break because there were so many questions. However, if your question is interesting for more students, I will be happy to answer it after the break to the entire class.

Email Contacts

If you have questions about the homeworks, you can send me an email. I try to answer emails in 24 hours, so if you do not get an answer, please resend it. Please send emails related to this course to

sbclass@sis.pitt.edu.

In my normal account sbrass@sis.pitt.edu, I get a lot of emails, for instance from the DBWORLD email list, and sometimes I overlook an important email. I try to put questions and answers on the web page, so it would be great if you could check it first.

Since I read my email on a UNIX machine, plain ASCII text is simplest for me. Microsoft Word format is more difficult, and other formats than ASCII, HTML, Postscript, PDF and Word I basically cannot read.

Homeworks can be submitted by email in exceptional cases. Please send homeworks directly to siripun@lis.pitt.edu. Email submissions create more work, because the first thing Siripun has to do is to print them. So please submit homework solutions only via email if you cannot attend the lecture.

Time and Office Hours

In my first year in the US, I have spent nearly all my time on teaching. I also was rewarded with very good student evaluations when I taught this course the last time, and I was really happy about that.

The problem is that no matter how good I teach (and I sure have to learn still a lot), I will be fired in 4.5 years, when my tenure evaluation is done, unless I also do good research. I am supposed to do research in half of my time, and teaching in the other half. Since I have to teach two courses, this leaves 1.5 days per week for teaching this course (counting Saturday as a normal work day). In these 1.5 days, I also want to improve the course materials, and to correct the exams.

I do not really believe that 1.5 days per week are realistic, but I want to protect at least Thursdays and Saturdays as research days. On these days I often will work at home, I will not read emails, and not give appointments. I would appreciate if you come to my office only during my office hours:

Mondays, 5–7 PM, Room 726, IS Building, 135 N. Bellefield Ave.

However, I understand that some of you live quite far away, and may need other appointments. Please send me an email or call me by phone (624-9404) to get an appointment. If you send me an email, include a few times which would be good for you.

If you have only a quick question, you may try to come directly to my office (on Thursdays and Saturdays only in especially urgent cases). However, sometimes I am under big time pressure, and may be not as friendly as I should be. I apologize for that.

Time pressure is usually highest before I am teaching (my other lecture is on Tuesdays, 3–5^{50} PM).

Let me also say that teaching is important to me. It is not only a means of earning money for me, but I also believe that I do something right if I give you the knowledge which will help you to find a good job and do it well. So do not misunderstand the preceding words as “Leave me alone”. I really want that you understand the material treated in this course, and experience shows that if you have problems then so do many other students.

Your Comments are Welcome!

I hope that in a few years, I will be able to write a book based on the material I developed for this course. For this reason your suggestions for improving the material would be very helpful for me. E.g.:

- Did you notice any typing errors or English language errors? Or even “real errors”?
- Which parts were hard to understand?
- What is missing in the course? This might be an entire topic or a small hint, warning, or explanation.
- Do you have any previous work experience with databases which you can share?
- Do you know other good examples or applications?
- Do you know other database management systems and can tell me about the differences?
- Did you encounter problems with Oracle software on your PC?
- Do you have suggestions for improving my teaching style?
- Do you know useful web links which should be included in my collection?

Often, I will reward you for your efforts with a bit of extra credit (normally 0.5% or 1%, but it varies depending on your efforts).

Also, when you graduate and start working with databases, I would be very happy to receive after some time an email from you telling me which parts were especially relevant for your work, which were not, and what is missing.

Materials are Available Online

All handouts will be made available online at

`http://www2.sis.pitt.edu/~sbrass/db00_2/`.

The transparencies will be available only in Postscript format, you can use Aladdin Ghostscript

`http://www.cs.wisc.edu/~ghost/aladdin/get550.html`

to view and print these files. I may try to convert them to PDF, but my experience shows that the quality is poor. Normal texts (like this Syllabus) can be more successfully converted to PDF.

I will also make urgent announcements and my answers to email questions about the homeworks available on the web page.

The web page also contains links to DBMS software vendors, a list of database books, links to homepages of influential database researchers, and more information.