IST 210: Organization of Data

(Subject to Change)

Teaching Team
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Office Hours  TBD
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TI      TBD

Course Information
Credits    4
Course     210
Location   TBD

Required Text
Additional readings are available in the course web site.

Course Description
IST 210 brings databases to life with a unique approach that focuses not only on constructing databases and using database tools, but also the implications of data uses and issues. This is an introductory course used to teach the fundamentals and basic principles of databases and their related technologies. Throughout this course, students will explore the areas that are fundamental to the design, development, and implementation of enterprise wide information systems. Throughout their exploration, students will develop an understanding of the social, ethical, and legal issues surrounding such implementations.

Course Objectives
Upon completion of this course, each student should be able to:
- Discuss the importance of data, databases, and database management
- Design and implement a database
- Design SQL queries to access databases
- Understand web-based databases.
- Understand how different databases exchange data
- Understand basic user interface design principles to support information processing

**Tentative Schedule** (Subject to Change)

**Week 1:**
- Course Introduction & HTML I
- Introduction to Database and Database Systems (Ch. 1)
- Lab: IST web space and a simple personal home page
  - Homework Assignment 1

**Week 2:**
- Introduction to the Dashboard project in IST; HTML II
- PHP
  - Lab: Group meeting to discuss project ideas
    - Project Assignment 1: 1-page project description

**Week 3:**
- HTML form and PHP
- Relational Model I (Ch. 2)
- Lab: Boolean Algebra; A PHP program to process data from web forms

**Week 4:**
- Relational Model II (Ch. 2); PHP: array;
- No class. (Both Luke and Anthony will attend iConference 2010.)
- Lab: A PHP program to access array data
  - Homework Assignment 2

**Week 5:**
- SQL I (Ch. 3)
- SQL II (Ch. 3)
- Lab: SQL Server and SQL Exercise I: Table Manipulation

**Week 6:**
- Study for Midterm and No Class
- Midterm
  - Homework Assignment 3

**Week 7:**
- Midterm review and Data Modeling and the Entity-Relationship Model I (Ch. 4)
- PHP and SQL Server: Connection
  - Lab: SQL Server and SQL Exercise II: Data Insertion and Query

**Week 8:**
Data Modeling and the Entity-Relationship Model II (Ch. 4)
Data Modeling and E-R Model: Homework and Project discussion
Lab: PHP and SQL Server: Connecting to Database
   Homework Assignment 4
   Project Assignment 2: E-R Modeling

Week 9:
   Database Design I (Ch. 5)
   Database Design II (Ch. 5)
   Lab: PHP and SQL Server: Send Query to Database and Get Results
      Homework assignment 5
      Project Assignment 3: Database Design (Relational Model + E-R Modeling)

Week 10:
   Project discussion: Database design
   Distributed databases
   Lab: PHP and SQL Server: Query Result Presentation
      Project Assignment 4: Data Retrieval (Queries)

Week 11:
   PHP and SQL Server: User access control
   PHP: Function
   Lab: PHP and SQL Server: Access Control
      Project Assignment 5: Web Database Connection and Access Control

Week 12:
   PHP: Session control
   Study for Midterm (in class Q & A)
   Lab: PHP and SQL Server: Write a Function for Access Control

Week 13:
   Mid-term 2
   Mid-term review; Database data exchange and XML
   Lab: Project Time

Week 14:
   Data organization in user interface (Readings will be distributed in class.)
   Data warehouse, data mining, and information privacy (Readings will be distributed in class.)
   Lab: Project Time
      Homework assignment 6

Week 15:
   Project time
   Project Presentation
   Lab: Project Time
      Project report due
Course Prerequisites
IST 110

Examination Policy
Mid-term: There are two in-class mid-terms.
Final: This course has no final exam.
Quizzes: Three unannounced quizzes. It usually takes five to ten minutes to complete a quiz in class. The one with the lowest score will be dropped in final grading.

Grading Policy
<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30% (5% each)</td>
</tr>
<tr>
<td>Project</td>
<td>40% (5% each report, 5% final presentation, 10% final report)</td>
</tr>
<tr>
<td>Midterm</td>
<td>20% (10% each)</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Class participation</td>
<td>5%</td>
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</tbody>
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| Extra credit       | Participating in research studies in IST
                    | Up to 3 points (one point per participation) |

A 95 and above
A- 90-95
B+ 85-90
B 80-85
B- 75-80
C+ 70-75
C 65-70
D 60-65
F below 60

Attendance Policy
Attending class is required. If you cannot come, please let the instructor know beforehand.
You will be expected to engage in class discussion actively. I encourage you to read various resources, such as information technology trade press or technology section in newspaper, to know the current hot issues and try to think about what roles database technology may play. You are also encouraged to use weblogs, or blogs, to keep personal journals of your readings and share your journals with others. Your class participation will count 5% of your final course grade. Class participation includes class attendance and active involvement in the class activity.

Academic Integrity
Individual assignments must be completed independently. Students are strongly encouraged to form study groups and to learn from peer students. However, discussion on homework questions in study group should be limited to general approaches to solutions. Specific answers should never be discussed. Penn State’s policy regarding Academic Integrity must be followed.
Affirmative Action & Sexual Harassment

The Pennsylvania State University is committed to a policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by Commonwealth or Federal authorities. Penn State does not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, gender, sexual orientation, or veteran status. Direct all inquiries to the Affirmative Action Office, 211 Willard Building.

Americans with Disabilities Act

IST welcomes persons with disabilities to all of its classes, programs, and events. If you need accommodations, or have questions about access to buildings where IST activities are held, please contact us in advance of your participation or visit. If you need assistance during a class, program, or event, please contact the member of our staff or faculty in charge.

An Invitation to Students with Learning Disabilities

It is Penn State’s policy to not discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in your testing or learning situation, your instructor should be notified during the first week of classes so that your needs can be accommodated. You will be asked to present documentation from the Office of Disability Services (located in 116 Bouclé Building, 863-1807) that describes the nature of your disability and the recommended remedy. You may refer to the Nondiscrimination Policy in the Student Guide to University Policies and Rules.