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Website: http://ctools.umich.edu
http://www.php-intro.com/

GSI Office Hours will be available on the CTools web page for the course.

Course Description
This course is an introduction to database management systems (DBMS). It covers both theoretical and practical aspects of DBMS, including database design, use, and implementation using the database language SQL. Students use the open-source MySQL database and the PHP scripting language for Web development throughout the course.

Pre-Requisites
Students should be familiar with the material covered in EECS182/EECS183/SI502 and SI339/SI539 (HTML, CSS, Programming, HTTP, etc) either through taking these courses or from other experience. Students who have no experience with programming, HTML, or CSS will find this course very challenging. Unless you have prior experience, I do not recommend taking this course in the same semester as you are taking a first programming course.

Learning Objectives
The purpose of this course is to provide students with all necessary skills for building and deploying database-backed web sites. The Learning Objectives for this course are to help students develop solid competency in:

- Be skilled in the PHP programming language
- Be skilled in Structured Query Language (SQL)
- Understand the relationship between a DBMS and the physical database and applications systems.
- Understand and explain the benefits of the relational model and normalization;
- Analyze unstructured problems and design data models.
- Transform data models into database designs;

Optional Textbook

Author: Robin Nixon.
ISBN-10: 1449319262
As of this semester, the textbook is now optional – there is plenty of online material about PHP. If you do not purchase the textbook you should become familiar with finding material about PHP online.

**Course Outline**

We spend the first five weeks covering the basics of PHP and MySQL to prepare you for the project portion of the course. You will take a timed practical midterm where you will develop a PHP and MySQL application as an individual during a three-hour lecture period.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>Date</th>
<th>LECTURE TOPIC</th>
<th>READING / ASSN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 9</td>
<td>Intro to PHP, Installation</td>
<td>Chapter 1, 2</td>
</tr>
<tr>
<td>2</td>
<td>January 16</td>
<td>Overview, Expressions, Hosting</td>
<td>Chapter 3, 4</td>
</tr>
<tr>
<td>3</td>
<td>January 23</td>
<td>Functions, Arrays, and Forms</td>
<td>Chapter 5, 6, 11</td>
</tr>
<tr>
<td>4</td>
<td>January 30</td>
<td>Objects, Sessions</td>
<td>Chapter 5, 12</td>
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<tr>
<td>5</td>
<td>February 6</td>
<td>Using SQL in PHP (PDO)</td>
<td>Chapter 8, 10(*)</td>
</tr>
<tr>
<td>6</td>
<td>February 13</td>
<td>Project Management / GitHub</td>
<td></td>
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<tr>
<td>7</td>
<td>February 20</td>
<td>Individual Practical Midterm Exam</td>
<td></td>
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<tr>
<td>8</td>
<td>February 27</td>
<td>Database Design</td>
<td>Chapter 9</td>
</tr>
<tr>
<td>9</td>
<td>March 6</td>
<td>Spring break</td>
<td></td>
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<tr>
<td>10</td>
<td>March 13</td>
<td>JavaScript</td>
<td>Chapter 13, 14</td>
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<tr>
<td>11</td>
<td>March 20</td>
<td>Ajax / JQuery</td>
<td>Chapter 17</td>
</tr>
<tr>
<td>12</td>
<td>March 27</td>
<td>Twitter Bootstrap</td>
<td>Chapter 18-20 (skim)</td>
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<tr>
<td>13</td>
<td>April 3</td>
<td>TBD</td>
<td></td>
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<tr>
<td>14</td>
<td>April 10</td>
<td>TBD</td>
<td></td>
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<td></td>
<td>April 17</td>
<td>TBD</td>
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<td></td>
<td>April 25-29</td>
<td>Online Final Exam</td>
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* We will be using the PDO calls in this class rather than the mysql_ calls described in the book - http://php.net/manual/en/book.pdo.php - the mysql_ calls have been deprecated in recent versions of PHP

Note: Schedule and topics may be changed/adjusted as the semester progresses.

**Exams**

The midterm exam for the class will be an in-class timed practical programming exercise. Given that the midterm is a significant fraction of the overall grade, if a student performs poorly on the midterm exam, it will limit the maximum grade the student can achieve in the course. The final exam will be available online and students will have some flexibility when they take the final exam.

**Late Policy**
Late assignments will be penalized by 20% times the number of days late. Homework that is 5 days or more late will receive zero credit.

**Homework**

Throughout the course there will be a weekly programming assignment that will be a PHP / MySql application to be developed and turned in. There may also be some material that you will study on your own and take a quiz for credit. Some weeks will have more than one assignment due.

**Grading**

The graded work in the course will be weighted as follows to determine a final percentage grade:

<table>
<thead>
<tr>
<th>Individual Assessments:</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Assignments / Quizzes</td>
<td>50%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

Grades will be awarded as follows:

- A 93% and above
- A- 90% and above
- B+ 87% and above
- B 85% and above
- B- 80% and above
- C+ 77% and above
- C 73% and above
- D 70% and above
- F Below 70%

**Getting an A+**

You may earn an A+ by exceeding requirements throughout the semester. To be considered for an A+, you must average at least 95% of the points possible on the assignments and midterm exams. And you must score at least 95% on the final exam.

Then you must submit a short explanation of how you have gone well beyond the requirements on all assignments throughout the semester. Your work must be running in production on the web to be considered. To apply for an A+, you must write a 1-3 page summary where you describe the areas where you did independent work on your application well beyond the requirements. Include the URL of your web site in your application and if a password is necessary to access portions of your site, include a password as well.

**Required Tools**

The software used for the course is 100% free. You will need a programmer text editor such a TextWrangler or NotePad++ as well as a PHP/MySql development environment. The simplest is to install one of the fully integrated all-in-one PHP/MySql packages such as MAMP, XAMPP, LAMP, or WAMP depending your operating system.
Using the Course Mailing List
Much of the communication for the course will be handled through email. Students are expected to keep up with all email that comes to them from the course mailing list. The mailing list is also a place to get help in the class. It is completely acceptable for a student in the course to attempt to help other students over the mailing list. The instructional staff will read all mail and correct any incorrect advice that one student gives another. All students have permission to post to the mailing list. Asking (or answering) questions through the mailing list counts as “participation”. Asking questions one-on-one (through email or in lab) does not.

Accommodations
If you think you need an accommodation for a disability, please let me know at your earliest convenience, but as soon as possible. Some aspects of this course, the assignments, the in-class activities, and the way I teach may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Office of Services for Students with Disabilities (SSD) to help us determine appropriate accommodations. SSD (734-763-3000; http://www.umich.edu/~sswd/) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. I will treat any information you provide as private and confidential.

Giving and Receiving Assistance
Learning technical material can be challenging. We move quickly through a wide range of topics. Our goal is for you to succeed in the course, and we encourage you to get help from anyone you like, especially in the portion of the course before the midterm.

You may get help even in completion of assignments. However, you are responsible for learning the material, and you should make sure that all of the assistance you are getting is focused on gaining knowledge, not just on getting through the assignments. If you receive too much help and/or fail to master the material, you will crash and burn at the midterm when all of a sudden you must perform on your own.

If you receive assistance on an assignment, please indicate the nature and the amount of assistance you received. If the assignment is computer code, add a comment crediting sources (as in any academic paper) or indicating who helped you and how.

If you are a more advanced student and are willing to help other students, please feel free to do so. Just remember that your goal is to help teach the material to the student receiving the help.

It is always appropriate to ask for and provide help on assignments via the course mailing list or during the optional labs.

Plagarism
At the University of Michigan and in professional settings generally, plagiarism is an extremely serious matter. All individual written submissions must be your own, original work, written entirely in your own words. You may incorporate excerpts from publications by other authors, but they must be clearly marked as quotations and properly attributed. You may obtain assistance with copyediting, and you may discuss your ideas with others, but all substantive writing and ideas must be your own unless explicitly attributed to another, using a citation sufficiently detailed for someone else to easily locate your source.
All cases of plagiarism will be officially reported and dealt with according to SI policies. There will be no warnings, no second chances, no opportunity to rewrite; all plagiarism cases will be immediately reported to SI's Dean of Academic Affairs. Consequences can range from failing the assignment (a grade of zero) or failing the course to expulsion from the University. For additional information about plagiarism, see the "Academic and Professional Integrity Policy Statement" in the SI Masters Student Handbook, the Rackham pamphlet on Academic Integrity, and the plagiarism document from the UM Libraries. If you have any doubts about whether you are using the words or ideas of others appropriately, please discuss them with the instructional staff of the course.

**Credit where credit is due**

This course has evolved over the last few semesters with help from a number of people, and the course will continue to evolve this term and in future terms with the help of everyone involved in SI572/SI664. Colleen van Lent, Charles Antonelli, Caitlin Holman, and students in prior semesters have all made contributions to materials and/or ideas used in this course.