S511: Database Design

Indiana University-Indianapolis (IUPUI)
School of Informatics and Computing
Department of Library and Information Science

Spring Semester, 2020

Active Time Zone           ET/EST
Meeting Time               Asynchronous
Meeting Location           Online via Canvas
Instructor                 Kyle M. L. Jones (MLIS, PhD)
Office Hours               By appointment
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Zoom Web Conferencing Room https://iu.zoom.us/j/507229692
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Course Information

Catalog Description

Concerned with a comprehensive view of the processes involved in developing formal access to information from a user-centered point of view. Considers various database models such as flat file, hierarchical, relational, and hypertext in terms of text, sound, numeric, image, and geographic data. Students will design and implement databases using several commercial database management systems.

Instructor’s Description

Database Design is a three-credit course that is concerned with a comprehensive view of the processes involved in developing formal access to data and information from a user-centered point of view. The course will introduce you to technical skills, theoretical concepts, and critical data issues on database design, management, and related socio-technical and ethical concerns. As an introduction to the area, we will cover basic database models and review different systems, which will support your work in libraries, museums, archives, cultural heritage institutions, and other various information roles.

Prerequisites

**Department of Library and Information Science (DLIS) Students**

I designed this course to serve students in the Department of Library and Information Science (DLIS). If you are a DLIS student, you should have completed the following courses before enrolling in this course:

- S500 - Methods and Tools for the Information Profession
- S501 - Information Services and Services
- S502 - Acquisitions and Management of Knowledge and Information
- S503 - Organization and Representation of Knowledge and Information

**Non-DLIS School of Informatics and Computing Students**

If you are a student from other departments within the School of Informatics and Computing, you should have completed the following course(s):
• INFO I501 or INFO B506 or INFO B519 or INFO B530 or INFO H541

Note: Students pursuing a Master of Science in Informatics with a specialization in Applied Data Science, a Master of Science in Informatics with a specialization in Sports Analytics, or a Ph.D. in Data Science should consider taking the fall semester, face-to-face course instead of this version. This course emphasizes concepts, skills, and technologies fit to professional needs of library and information science students.

Other Prerequisites
Additionally, I expect you to have the ability to manage your own computer with respect to installing new applications. While not required, a curiosity about and interest in learning new technologies will serve you well in this course. Other than that, no specific database skills are necessary to be successful in this course.

Instructional Style and Philosophy

I strive to create inclusive learning communities whereby we can work together—students with instructor, students with students—to achieve our educational objectives and co-construct knowledge. To achieve these ends, I work to develop social learning experiences and environments that engage my students at personal, professional, and intellectual levels to share their past experiences and knowledge, as well as their future ambitions. Each student needs to respect him or herself, his or her peers, and his or her instructor to maximize the plurality of ideas that may arise when we interact as a community and optimize the goods that come from intellectual inquiry.

How does this philosophy play out in the classroom? I often employ collaborative projects, and I purposefully use discussion forums to engage all learners. I create opportunities for students to explore their personal interests, but I make sure personalized learning is aligned to course learning objectives. I scaffold student learning by encouraging—and sometimes requiring—students to explore minority-held positions, contrarian viewpoints, and alternative values and value sets. Note that some course material fits these types of aims better than others, but the overarching goals remain.

Student Learning Outcomes

Departmental Master of Library and Information Science Program Goals (PGs)
The Master of Library and Information Science (MLIS) program prepares students to become reflective practitioners who connect people and communities with information. The program goals (PGs) were adjusted to the following effective spring 2020:
1. Connect Core Values and Professional Ethics to Practice
2. Facilitate Engagement in the Information Ecosystem
3. Curate Collections for Designated Communities
4. Lead and Manage Libraries, Archives and Other Information Organizations
5. Organize and Represent Information
6. Conduct Systematic Research to Inform Decisions
7. Innovate Professional Practice with Information Services and Technology

**Principles of Graduate and Professional Learning (PGPL)**

The principles below form a conceptual framework that describes expectations of all graduate/professional students at IUPUI. More specific expectations are determined by the faculty in a student's field of study. Together, these expectations identify knowledge, skills, and abilities graduates will have demonstrated upon completing their specific degrees. There are four PGPLs:

1. Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field
2. Thinking critically, applying good judgment in professional and personal situations
3. Communicating effectively to others in the field and to the general public
4. Behaving in an ethical way both professionally and personally

**Revised Bloom’s Taxonomy (RBT) Levels**

The revised Bloom’s taxonomy (RBT) presents a way to classify different types of learning experiences across two levels: 1) The revised Bloom’s taxonomy cognitive process (RBTCP) dimension and 2) the revised Bloom’s taxonomy knowledge (RBTK) dimension. The RBTCP dimension represents a continuum of increasing cognitive complexity—from remember to create—across six levels:

1. Remember
2. Understand
3. Apply
4. Analyze
5. Evaluate
6. Create

The RBTK dimension represents a range from concrete (factual) to abstract (metacognitive) across four levels:

1. Factual
2. Conceptual
3. Procedural
4. Metacognitive

Course Learning Outcomes
The following course learning outcomes describe what students can expect to learn and do at the completion of the course. These outcomes are informed by the RBT and are aligned with PGs and PGPLs. Each outcome is mapped to assessments described below.

<table>
<thead>
<tr>
<th>ID</th>
<th>Course Learning Outcome Description</th>
<th>Outcome Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design and implement relational databases using tables, keys, relationships, and SQL commands to meet user and operational needs.</td>
<td>PGs</td>
</tr>
<tr>
<td>2</td>
<td>Diagram a relational database design with entity–relationship diagrams (ERDs) using crow’s foot notation to enforce referential integrity.</td>
<td>3, 5</td>
</tr>
<tr>
<td>3</td>
<td>Evaluate tables for compliance to third normal form and perform normalization procedures on noncompliant tables.</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Write triggers to handle events and enforce business rules and create views within a relational database.</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Formulate queries in relational algebra using selection, projection, restriction, Cartesian product, join, and set operators.</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Demonstrate an understanding of the data lifecycle, including data curation, stewardship, preservation, and security.</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Evaluate the social and ethical implications of data management.</td>
<td>1</td>
</tr>
</tbody>
</table>

Units and Modules
This course covers 17 weeks. 13 of those weeks include substantive content; three weeks account for the intro to the course, a week of one-on-one meetings with me, and finals week. The semester has been broken down into three thematic units with their own interconnected modules.
### Unit 1 - Database Concepts

<table>
<thead>
<tr>
<th>Unit</th>
<th>Module</th>
<th>Module Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Database Systems</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Data Models</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Relational Databases, Part 1</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>Relational Databases, Part 2</td>
</tr>
</tbody>
</table>

### Unit 2 - Database Design and Management

<table>
<thead>
<tr>
<th>Unit</th>
<th>Module</th>
<th>Module Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td>Entity Relationship Modeling, Part 1</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Entity Relationship Modeling, Part 2</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>Advanced Data Modeling</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>Database Normalization</td>
</tr>
</tbody>
</table>

### Unit 3 - Data Access and Reporting Using Structured Query Language (SQL)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Module</th>
<th>Module Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>9</td>
<td>SQL Syntax and Programmatic Database Creation</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>Beginning SQL Queries with the SELECT Statement</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>SQL Queries and Programmatic Joins</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>Filtering and Operators</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>Querying for Data Visualization</td>
</tr>
</tbody>
</table>

### Schedule

There is a new module each week. Each module’s content will reveal when a new week begins. Make special note that each week begins on Saturday at 12:00 AM and ends on the following Friday at 11:59 PM. I break it up this way so that the weekend can be used to help you handle the heavy reading load and so most of the week can focus on discussion and other activities.
<table>
<thead>
<tr>
<th>Week</th>
<th>Unit</th>
<th>Module</th>
<th>Start</th>
<th>End</th>
<th>Schedule Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/A</td>
<td>Intro</td>
<td>Sat, Jan 11</td>
<td>Fri, Jan 17</td>
<td>First day of the semester is Monday</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Sat, Jan 18</td>
<td>Fri, Jan 24</td>
<td>No class activities on Monday due to MLK Jr. Day</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Sat, Jan 25</td>
<td>Fri, Jan 31</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>3</td>
<td>Sat, Feb 1</td>
<td>Fri, Feb 7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>4</td>
<td>Sat, Feb 8</td>
<td>Fri, Feb 14</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>5</td>
<td>Sat, Feb 15</td>
<td>Fri, Feb 21</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>6</td>
<td>Sat, Feb 22</td>
<td>Fri, Feb 28</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>7</td>
<td>Sat, Feb 29</td>
<td>Fri, Mar 6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>8</td>
<td>Sat, Mar 7</td>
<td>Fri, Mar 13</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>9</td>
<td>Sat, Mar 14</td>
<td>Fri, Mar 20</td>
<td>No class activities from Monday through Friday due to Spring Break</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>10</td>
<td>Sat, Mar 21</td>
<td>Fri, Mar 27</td>
<td>No class activities from Saturday through Sunday due to Spring Break</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>11</td>
<td>Sat, Mar 28</td>
<td>Fri, Apr 3</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>12</td>
<td>Sat, Apr 4</td>
<td>Fri, Apr 10</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>13</td>
<td>Sat, Apr 11</td>
<td>Fri, Apr 17</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>13</td>
<td>Sat, Apr 18</td>
<td>Fri, Apr 24</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>N/A</td>
<td>One-on-One</td>
<td>Sat, Apr 25</td>
<td>Fri, May 1</td>
<td>No class activities except for one-on-one meetings</td>
</tr>
<tr>
<td>17</td>
<td>N/A</td>
<td>N/A</td>
<td>Sat, May 2</td>
<td>Fri, May 8</td>
<td>No class activities on Monday; Final Exam week (grades posted by end of day on the 10th)</td>
</tr>
</tbody>
</table>
Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Outstanding achievement. Student performance demonstrates full command of the course materials and evinces a high level of originality and/or creativity that far surpasses course expectations.</td>
<td>96-100</td>
</tr>
<tr>
<td>A-</td>
<td>Excellent achievement. Student performance demonstrates thorough knowledge of the course materials and exceeds course expectations by completing all requirements in a superior manner.</td>
<td>90-96</td>
</tr>
<tr>
<td>B+</td>
<td>Very good work. Student performance demonstrates above-average comprehension of the course materials and exceeds course expectations on all tasks as defined in the course syllabus.</td>
<td>87-90</td>
</tr>
<tr>
<td>B</td>
<td>Good work. Student performance meets designated course expectations, demonstrates understanding of the course materials, and performs at an acceptable level.</td>
<td>84-87</td>
</tr>
<tr>
<td>B-</td>
<td>Marginal work. Student performance demonstrates incomplete understanding of course materials.</td>
<td>80-84</td>
</tr>
<tr>
<td>C</td>
<td>Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course materials. An incomplete may be granted under special circumstances.</td>
<td>70-80</td>
</tr>
<tr>
<td>D</td>
<td>Student has failed the course. An incomplete is not an available option.</td>
<td>60-70</td>
</tr>
<tr>
<td>F</td>
<td>Student has failed the course. An incomplete is not an available option.</td>
<td>60 and below</td>
</tr>
</tbody>
</table>

Grading Notes

1) I will calculate final grades to the first decimal point. If your final grade is at .5 or above, I will round up. For instance, if you receive a 93.5 on your final grade, I will round this up to a 94.

2) Students must receive a B- or above for a course to satisfy core requirements (e.g., S500, S501, S502). Students must receive a C or above for an elective course applied to the MLIS. Students must maintain a 3.0 GPA overall and must finish coursework with a 3.0 GPA. If in any semester a student receives less than a 3.0 for that semester, he or she will be placed on probation and will need to achieve a 3.0 overall GPA during the next semester.

3) A “B” grade is the norm for graduate students. A+ grades are not given in the department.
4) As of spring semester of 2019, all DLIS instructors should be using this grading scale.

5) Late assessments may be penalized one point per day late.

6) I reserve the right to require you to revise and resubmit assessments in order to maximize your learning and the opportunity to earn substantial points towards your final grade.

Assessment Descriptions

Complete details about each assessment will be available to you in the course site, including a rubric that will outline exactly how you will be graded and specific due dates.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Learning Outcomes</th>
<th>Description</th>
<th>Module</th>
<th>Due Date</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course and Community Introduction</strong></td>
<td>Introduce Yourself and Meet Your Peers</td>
<td>Students will participate in a structured discussion that requires them to introduce themselves using Kaltura, a multimedia capture system.</td>
<td>Intro</td>
<td>Fri, Jan 17, 2020 11:59 PM</td>
<td>1</td>
</tr>
<tr>
<td>• 2% of overall grade</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Course Site and Syllabus Quiz</strong></td>
<td>None</td>
<td>Students will complete a quiz that asks them questions related to the construction of the course site and related information the course site presents, as well as information on the syllabus.</td>
<td>Intro</td>
<td>Fri, Jan 17, 2020 11:59 PM</td>
<td>1</td>
</tr>
<tr>
<td>Assessment</td>
<td>Learning Outcomes</td>
<td>Description</td>
<td>Module</td>
<td>Due Date</td>
<td>Points</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>----------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Module Homework</strong></td>
<td>Module Homework</td>
<td>Students will complete weekly homework activities that assess their understanding of the module’s material. Homework may be a quiz, partner work, discussion, or workbook exercises.</td>
<td>1-13</td>
<td>• Due by 11:59 PM on the Friday of the module</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>1, 2, 3, 4, 5, 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>Participation</td>
<td>Students will participate in student-led discussions focused on Rob Kitchin’s <em>The Data Revolution</em>.</td>
<td>1-10</td>
<td>• Initial posts are due by 11:59 PM on the Tuesday of the module</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
<td></td>
<td></td>
<td>• Response posts follow on Wednesday through Friday of the module</td>
<td></td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
<td>None</td>
<td>Students will lead one module of discussion to set the focus and moderate the conversation.</td>
<td>See assessment description</td>
<td>Depending on your choice; see assessment description</td>
<td>5</td>
</tr>
<tr>
<td><strong>Data Book</strong></td>
<td>Part 1: The Database Narrative</td>
<td>Students will write a database narrative that explains the purpose of the database, what the database encompasses, and how data will be structured and related.</td>
<td>5</td>
<td>Fri, Feb 21, 2020 11:59 PM</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>Learning Outcomes</td>
<td>Description</td>
<td>Module</td>
<td>Due Date</td>
<td>Points</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>---------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Part 2: The Entity Relationship</td>
<td>1, 2, 3</td>
<td>Students will develop a comprehensive entity relationship diagram using relational schemas, Crow's foot notation, and normalization strategies.</td>
<td>9</td>
<td>Fri, Mar 27, 2020 11:59 PM</td>
<td>18</td>
</tr>
<tr>
<td>Diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-on-One</td>
<td>None</td>
<td>Students will schedule a 30 minute meeting to discuss progress on and questions related to their data book.</td>
<td>One-on-One</td>
<td>Fri, May 1, 2020 12:00 AM</td>
<td>1</td>
</tr>
<tr>
<td>Part 3: The Database</td>
<td>1, 4, 5</td>
<td>Students will use their database narrative and entity relationship diagram to inform the creation of an actual database.</td>
<td>Finals Week</td>
<td>Tue, May 5, 2020 11:59 PM</td>
<td>18</td>
</tr>
<tr>
<td>Virtual Symposium</td>
<td>None</td>
<td>Students will present their data book using Kaltura, a multimedia capture system, and view and respond to their peers' work in a discussion.</td>
<td>Finals Week</td>
<td>Tue, May 5, 2020 11:59 PM</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL POINTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Materials and Resources

Required Textbooks

Below are the assigned texts for this course. Unless otherwise noted, purchase the edition of the text when I note it in the citation. Per 20 U.S. Code § 1015b subsection D, I will submit these texts to the IUPUI bookstore to fulfill my federal requirement, but I neither endorse nor recommend purchasing the texts from the university bookstore. You may choose to purchase and/or access the texts in ways that serve your interests, for instance: borrow the texts from your local library or the university library, buy a used copy, or share a copy with a friend. I do recommend buying from your local bookstore.


This text is expensive. I apologize for the cost, but it is of superior quality. I reviewed over five texts, and none compared regarding quality, clarity, and instructional support (e.g., sample databases, sample SQL statements).

A note on older editions: I have reviewed the detailed tables of contents for the 9th, 10th, and 11th editions. It seems that these editions align very closely with our 12th edition text, and they may be a fine substitute at a much lower cost. Consider buying them used or renting them from Amazon for as low as $3.

The most recent edition is the 13th edition, but I am not using it. I will refer to examples and sample files from the 12th edition, and some of our homework will come from the 12th edition. Concerning the sample files and homework questions, I will make them accessible to you so that you do not need the 12th edition text.


This text is widely available used at a low cost, usually for less than $7. An eBook copy is available via IUCAT using your IU account.

However, the electronic copy is a single-user edition, which means that if one student selects “check out” on the ebook, it will be unavailable to all. However, if students do not select “check out,” multiple users will be able to read it online and/or print chapters.

An eBook copy is available via IUCAT using your IU account.

**Other Required and Supplementary Materials**

Other book chapters, journal articles, miscellaneous readings, and media listed in the weekly modules are either openly accessible or accessible using your IU credentials.

**Suggested Texts and Resources**

I am a stickler for APA, and I often include proper APA citation and format style as criteria on my rubrics. Please be familiar with this text, or at the least get familiar with the Purdue University Online Writing Lab’s (OWL) APA formatting and style guide.


An eBook copy is available via IUCAT using your IU account.

Technical courses such as this one benefit from the accessibility to a wide variety of free, online resources. I highly encourage you to peruse and reference the following resources throughout the course as needed:

**IU resources:**
- [IU IT Training workshop materials](#) (look for Access and SQL items)

**Self-paced tutorials/courses:**
- [W3schools SQL Tutorial](#)
- [Code School](#)
- [Khan Academy](#)
- [Code Academy](#)
- [lynda.com Access tutorials](#)
• lynda.com SQL tutorials

Some self-paced tutorial sites require you to create an account. Lynda.com videos are available at no charge by signing into the organizational portal by putting in iupui.edu as the organization name.

Technology

Basics
Internet and computer access is required. Your Internet speed should sufficiently support uploading and downloading of large file sizes. Your computer should be up-to-date with the latest operating system in order to support the required applications listed below; it should also have anti-virus software. The latter is especially important given the fact that we will be sharing files between ourselves. You also need a microphone; a webcam may be useful but it is not necessary.

Course Site
We have access to a Canvas course site. I will use this site as a way to post updates, store documents, receive assignments, and to accommodate online learning activities, among other things. It is your responsibility to review the course site multiple times a week. Should you have technical, non-course related issues with Canvas, please look through the knowledge base or contact the UITS Support Center.

Required Applications
The following applications are required for you to participate successfully in this course. I will not make accommodations for alternative applications, because these tools are directly related to exercises, assignments, and learning objectives.

1) Kaltura

We will use Kaltura to create and share screencasts, as well as your final Virtual Symposium presentation. Screencasts can capture our desktop and applications as we interact with them, which allows us to demonstrate our processes and technical questions in an easy way. Kaltura is available for free using your IU account.

To capture your desktop, you will need to install Kaltura Personal Capture, which is free and available for PC and Mac users. You can manage all of your recordings by logging in and going to your my media page. Once you’ve created some media, you can share it. Watch this instructional screencast to find out how.
2) Zoom

We will use Zoom for meetings. This is a web-conferencing application that allows us to share our desktops, applications, microphones, and webcams. The URL to our Zoom room is available on the first page of this document.

To learn how to join a Zoom room and download the necessary (but free) software for PC and Mac users, see this instructional video.

3) phpMyAdmin

We will use phpMyAdmin for most of our database exercises. phpMyAdmin provides a graphical user interface (GUI) and programmatic features to create, modify and query databases using structured query language (SQL). Databases in phpMyAdmin will be accessible via the web using credential I provide. That said, I can make arrangements for you to access these databases using a specific database application should you wish to interact with them by these methods.

4) Microsoft Access 2013

We will use Access for some of our database exercises. Access is available for free using the IUanyware desktop virtualization platform. See the knowledge base document for help. Note that you must have an Internet connection in order to use IUanyware. Use of Access 2016 should be fine if you want to use it, but I model database creation and manipulation in lectures using the 2013 version; there may be interface differences.

5) Pulse Secure Virtual Private Network (VPN)

We may need to use Pulse VPN in order to access SoIC server resources. The VPN creates an encrypted network connection, which protects the data your computer transmits and receives over the internet, enabling secure remote access to restricted online resources. VPNs are good tools to use at all times when feasible, and you can find out more about VPNs at this informative page.

6) A Text Editor

Text editors are types of applications focused on helping you write clear markup and programming code. There are a variety of free text editors available for both Mac and Windows computers, and I suggest the following:

- Brackets (Mac/Windows)
- Atom (Mac/Windows)
• **Notepad++ (Windows)**

   It matters not to me which one you choose. But you must have at least one text editor installed.

7) **Microsoft Visio 2013**

   We will use Visio to create entity relationship diagrams using Crow's Foot notation.

   *For PC AND Mac users:* Visio is available for free using the IUanyware desktop virtualization platform. See the knowledge base for help. Again, note that you must have an Internet connection in order to use IUanyware.

8) **draw.io**

   draw.io is a freely accessible, web-based entity relationship diagramming (ERD) tool. We will use it to create entity relationship diagrams using Crow's Foot notation. It does not require a user account.

9) **Tableau Public**

   We will use Tableau’s “public” version for our last module on querying for data visualization purposes. You can download Tableau Public for free for your Mac or Windows computer.

**Suggested Applications**

The following applications are suggested only to help your success in this class and/or as additional tools you may find useful. Some of the tools listed below may be accessible for free via IU’s IUWare catalog of software or IUAnyWare, a software virtualization system.

1) **Grammarly**

   Grammarly is a stand-alone application and plugin that you can install in Microsoft Word (for Windows) and many standard web browsers. As you type, it looks for issues related to spelling, grammar, punctuation, sentence structure, and style. It also suggests vocabulary enhancements. It doesn't fix your issues for you; it shows you what is wrong with your writing, teaches you why it's wrong, and suggests some ways to fix the problems. This tool is especially good for writing in discussion forums and other writing-based assessments. But like any automated writing resource, Grammarly is not perfect. You still need to use your experience, education, and common sense to make sure its recommendations make sense.
Grammarly is free. You have access to its premium features because of an institutional contract. And you can create an account easily at their education website. If you need help getting your account setup, check out this help document.

Privacy Policies
The technologies we use in this course have different privacy policies. I believe that the technologies we will use respect your privacy in that they do not negatively impact your ability to develop ideas and beliefs by interfering in the educational process. Regardless, you should review their policies to see if they respect your privacy preferences. The links below are to each technology provider’s respective site. Do note that IU or IUPUI may have made changes (e.g., addendums) to these policies when the organizations were contracted as a service provider. These changes will not be reflected in the general policies below.

The privacy policies:
• Canvas
• Kaltura
• Zoom
• phpMyAdmin (installed and maintained by UITS)
• Microsoft
• Pulse Secure
• Brackets —UNKNOWN, use with caution
• Atom
• Notepad++ —UNKNOWN, use with caution
• draw.io
• Tableau
• Grammarly

Other Resources

Adaptive Educational Services (AES)
Access the AES website
(317) 274-3241

What AES does for students and on your behalf:
• AES receives students’ documentation of disabilities, evaluates it in order to determine the correct accommodations and services students are entitled to receive.
• AES provides some accommodations for students and directs them to other campus or off-campus groups that can provide other assistance.
• AES works to educate the IUPUI staff and faculty both in Indianapolis and at Columbus regarding the university's and its employees' legal responsibilities regarding students with disabilities.
• AES works with academic units to provide academic substitutions and waivers for students with disabilities which do not fundamentally alter those programs' standards.
• AES serves as an advocate for students with disabilities, working as a mediator with faculty over classroom issues, with administrators regarding campus policies, and encouraging the university to expand its vision and policies regarding persons with disabilities.

**Counseling and Mental Health Services**
Access the Counseling and Mental Health Services website
(317) 274-2548
(317) 251-7575 for the 24 hours crisis hotline

Counseling and Mental Health Services provides the following services to students:
• group counseling
• individual counseling
• medication management
• testing

**Libraries**
Access the library website
(317) 274-8278

Library staff take an active interest in serving the teaching, research and scholarly activities of IUPUI students, faculty, staff, and the citizens of Indiana as well as visiting scholars. Beyond its immense physical collection, the libraries offer a breadth and depth of online resources. Additionally, and most importantly for your needs, the librarians can provide custom research support for whatever project you have. Our liaison, Willie Miller (wmmiller@iupui.edu), should be your first point of contact for this service.

**University Information Technology Services (UITS)**
Access the UITS website
Access the knowledge base
Get help using live chat
ithelp@iu.edu
If you have any questions about or issues with any of the technology used in this course please contact the University Information Technology Services (UITS) support team. For Canvas questions please search for “Canvas” in the knowledge base.

**The Writing Center**
Access The Writing Center website
(317) 274-2049

The Writing Center offers individual writing instruction, online assistance and classes to students. Students can work one-on-one with experienced readers and writers to improve their writing process and receive constructive feedback on their assignments. It is an excellent resource for any type of writing assignment. All consultations are available online using Zoom web conferencing software.

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**Course Policies**

**Absences and Participation**

Given that this is an online course, there is no such thing as an absence, traditionally defined. However, online students often fall into a trap, as they tend not to schedule when they will “attend” the course, which I translate as participation. What happens is that students try to cram their participation into the final day of the week for a module. This will not work in my class.

I expect active, substantive, thoughtful participation in my online classes. This requires you to carve out time in your weekly schedule in order to give yourself the best chance at success. With that in mind, I suggest that you treat this course as one that meets multiple times a week. For instance, you might want to schedule your “attendance” in class on particular days for an hour or so each day. Separating the time you spend in class will allow you to stay caught up on emerging conversations in the class and decrease the chances that you will procrastinate (I do it, you do it; it’s a human thing). But research has shown that breaking tasks and projects into smaller chunks (like your time “in the course” per week) will help you to not procrastinate. Should your participation be substandard, I will contact you. I also reserve the right to deduct points from your grade.
Academic Integrity and Misconduct

Please review the academic misconduct policy in the IUPUI Policies section below. I expect my students to strictly adhere to that policy. Academic dishonesty in any form will result, in a minimum, of a grade of 0 for the assessment in which it was demonstrated; further, I reserve the right to pursue the university level academic misconduct processes. Should you be at all concerned about plagiarizing the work of others, always cite and reference your sources appropriately using APA style, and contact me with any questions.

Communicating with Your Instructor

Should you have any questions regarding the course, please feel encouraged to contact me. Please note that I respond to virtual communications primarily during “business hours” (9 AM - 5 PM, Monday through Friday), but I respond quickly. When sending me e-mail, please put “511” in the subject line. Should you have an emergency, contact the emergency phone number listed on the first page.

For questions about the syllabus, assignments, and readings that are not private in nature, I encourage you to use the appropriate forums in our course site. Open questions may be answerable by your peers, and open answers may be appreciated by your peers!

Completing Assessments

Assessments of all types must be completed by their due date and time. Pay careful attention to due dates and times, as well as the method by which you should “turn in” the assessment. Late assessments may be penalized one point per day. When assessments require feedback or I feel you could use feedback, I will provide it using mechanisms built into our course site or by writing on your completed work and returning it to you via digital means. You can expect feedback on all assessments within one week after submission.

I understand that life gets in the way, and I recognize that graduate school should not always be your first priority. In cases where you experience an unexpected emergency or life crisis, I will negotiate extended deadlines. For religious observances, I expect that you will contact me about these, and like I formerly stated, we can negotiate an extended deadline. For work and family obligations where events are scheduled ahead of time, I expect you to finish your work on time.
Course Evaluations

I take your evaluation of this course and my teaching seriously, and so does the department. Both parties seek to make your learning experiences challenging and fruitful, personally and professionally. Thoughtfully written evaluations on your part help us to accomplish these goals. Please complete the anonymous online course evaluation at the end of the semester when you receive an email invitation from the university assessment office. Thanks for your participation in this important process.

Learning Analytics and Student Privacy

Modern learning management systems and other educational technologies increasingly include learning analytics technology, which tracks and analyzes student behaviors in online information systems. These systems, like Canvas, can detail how long you spend doing certain activities, when you sign in and out, and compare your activity to that of your peers, among other things.

As a scholar, I research issues of student privacy related to learning analytics technologies. I value your privacy, and I know it is instrumental to your success as a student and development as a person. Unfortunately, vendors design these systems in such a way that neither you nor I can turn off the tracking mechanisms.

I will use the analytic features in our course site to:

- investigate technical issues;
- use as evidence in academic misconduct cases;
- and to look into a lack of student participation.

Office Hours

Since we are all distributed throughout the country (if not the world!), office hours in the traditional sense do not apply to this course. Instead, I encourage you to make an appointment with me. We can speak with each other via phone or in our Zoom room.

Reading

You need to take the time to read carefully. Failure to do so will negatively impact your performance in class assessments. But let’s be honest with each other: you are balancing this coursework with that of, possibly, two other classes, your professional responsibilities, and a personal life. You will have a difficult time trying to read every single word I assign for this course due to time
restrictions. Reading smartly means reading strategically and efficiently. Please review these two wonderful resources on strategies you can employ to get the most out of your reading:

1) Shia Lurie’s “How to read a book in two hours or less"

2) Daniel Bilar’s handout on “Efficient reading”

**Statement of Instructor Availability**

Please note that I make my students and my courses a priority in my professional life, but circumstances sometimes complicate my availability. Often there are times throughout the year where I need to fly to other states or other countries to conduct and present research. With that in mind, please be flexible with me if I need to make adjustments to the course’s schedule. In cases where I will be less accessible to you and less engaged with the course, I will be transparent about what those limitations may be.

**Submission of Final Grades**

Final grades are due to the registrar 48 hours after final exams. However, as an online course, we do not have a set date for a final exam. I am setting Friday, May 8th at 12 PM as our “final exam” time slot. I will submit grades no later than Sunday, May 10th at 12 pm. Your grades should show up in the student information system within 24 hours of submission.

**IUPUI Policies**

**All IUPUI Policies**

Please review IUPUI-specific policies each semester to be aware of your rights and responsibilities. I have pulled out policies that I absolutely want you to be aware of below.
Disability Accommodations

Every attempt will be made to accommodate qualified students with disabilities (e.g. mental health, learning, chronic health, physical, hearing, vision, neurological, etc.) You must have established your eligibility for support services through the appropriate office that services students with disabilities. Note that services are confidential, may take time to put into place, and are not retroactive. Captions and alternate media for print materials may take three or more weeks to get produced. Please contact your campus office as soon as possible if accommodations are needed.

Students needing accommodations because of disability will need to register with Adaptive Educational Services and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by using a telephone and calling (317) 274-3241, using a video phone and calling (317) 278-2052, or e-mailing aes@iupui.edu.

For accessibility information for persons using adaptive technology with Canvas, please visit Canvas Product Accessibility.

Religious Holidays

IUPUI respects the right of all students to observe their religious holidays and will make reasonable accommodation, upon request, for such observances. Students seeking accommodation for religious observances must submit a request in writing to the course instructor by the end of the second week of the semester and should use the Request for Course Accommodation Due to Religious Observance Form. More information on the IUPUI Policy on Religious Holidays is available at the Student Central website.

Academic Integrity

The IU Code of Student Rights, Responsibilities, and Conduct states that students must uphold and maintain academic and professional honesty and integrity; the code defines academic misconduct as any activity that tends to undermine the academic integrity of the institution. Students engaging in academic misconduct may therefore receive penalties from their course instructor and disciplinary action from the university. Policies against academic misconduct apply to all course-, department-, school-, and university-related activities. Academic misconduct may involve human, hard-copy, or electronic resources and includes but is not limited to the following: cheating, fabrication, plagiarism, interference, violation of course rules, and facilitating academic dishonesty. For definitions of these activities, visit the student code website. For information on how faculty and students are expected to handle cases involving academic misconduct, visit the Student Central website. Additional information about the rights and responsibilities of IU students is available at the student code website.
Sexual Misconduct

As your instructor, one of my responsibilities is to help create a safe learning environment on our campus. Title IX and our own Sexual Misconduct policy prohibit sexual misconduct. If you have experienced sexual misconduct, or know someone who has, the University can help.

If you are seeking help and would like to speak to someone confidentially, please visit the Stop Sexual Violence website for contact information.

It is also important that you know that federal regulations and University policy require me to promptly convey any information about potential sexual misconduct known to me to our campus’ Deputy Title IX Coordinator or IU’s Title IX Coordinator. In that event, they will work with a small number of others on campus to ensure that appropriate measures are taken and resources are made available to the student who may have been harmed.

Protecting a student's privacy is of utmost concern, and all involved will only share information with those that need to know to ensure the University can respond and assist.

I encourage you to visit the Stop Sexual Violence website to learn more about available resources on campus and in the community.

Education and Title VI

Title VI of the Civil Rights Act of 1964 protects people from discrimination based on race, color or national origin in programs or activities that receive Federal financial assistance.

Programs and activities that receive ED funds must operate in a non-discriminatory manner. These may include, but are not limited to: admissions, recruitment, financial aid, academic programs, student treatment and services, counseling and guidance, discipline, classroom assignment, grading, vocational education, recreation, physical education, athletics, housing and employment, if it affects those who are intended to benefit from the Federal funds.
Coda

The coda lists revisions made to the syllabus after it was presented to students during the semester. It also acknowledges those who helped shaped it.

Revisions

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Acknowledgements

I thank the students of semesters past who provided constructive, substantive feedback in their course evaluations.