BMI 544/644 Databases
Winter term 2017

Course Description

An introduction to databases and modern database concepts. The primary topics covered in this course include data and data organization, database principles, relational databases, database design, the SQL query language, database optimization, data warehousing, big data and NoSQL.

Instructor

Justin Fletcher, Ph.D.
BICC 415
fletchju@ohsu.edu

Required Textbook

Databases Illuminated, Third Edition
Catherine M. Ricardo, PhD
Susan D. Urban, PhD
Jones & Bartlett Learning 2017
SBN-13: 9781284056945
ISBN-10:1284056945

Grading
There will be homework assignments based on lectures and reading assignments; late assignments will lose 10% or more depending on the number of days late unless prior permission is obtained.

There will be mid-term and final examinations.

BMI 544

50% Homework assignments
25% Mid-term examination
25% Final examination

BMI 644

40% Homework assignments
20% Mid-term examination
20% Final examination
20% Term project

Course Grades

A  90-100%
B  80-89.99%
C  70-79.99%
D  60-69.99%
F  Below 60%

Online Materials

New class material will be posted each week on Wednesdays.

Computing requirements

Students will be required to install specified database systems during the quarter.

Term Project

The project for this term is for you to describe a database-dependent application and implement the database required for that application. The application might be for a business that you are familiar with or for a household need, perhaps one of your hobbies. The data requirements must be simple enough to manage in a small project but still be challenging to you.

You will be graded on content, completeness, and presentation.
Weekly Topics and Assignments

The schedule below is tentative.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to database concepts</td>
<td>Assignment 1</td>
</tr>
<tr>
<td>2</td>
<td>The entity-relationship model</td>
<td>Assignment 2</td>
</tr>
<tr>
<td>3</td>
<td>The relational model</td>
<td>Assignment 3</td>
</tr>
<tr>
<td>4</td>
<td>Introduction to SQL</td>
<td>Assignment 4</td>
</tr>
<tr>
<td>5</td>
<td>Normalization and denormalization</td>
<td>Mid-term</td>
</tr>
<tr>
<td>6</td>
<td>Transaction management and distributed databases</td>
<td>Assignment 5</td>
</tr>
<tr>
<td>7</td>
<td>Data warehouses and data mining</td>
<td>Assignment 6</td>
</tr>
<tr>
<td>8</td>
<td>Big data and NoSQL</td>
<td>Assignment 7</td>
</tr>
<tr>
<td>9</td>
<td>SQL programming and Internet considerations</td>
<td>Assignment 8</td>
</tr>
<tr>
<td>10</td>
<td>Case study: heart failure quality measures</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>Final examination</td>
<td></td>
</tr>
</tbody>
</table>

Course Grading Policy

Final grades are determined at the end of the quarter and usually are assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>94 – 100</td>
</tr>
<tr>
<td>A-</td>
<td>90 – 93</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
</tr>
<tr>
<td>C-</td>
<td>70 – 72</td>
</tr>
<tr>
<td>D/F</td>
<td>&lt; 70</td>
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</tbody>
</table>

Graduate Studies in the OHSU School of Medicine is committed to providing grades to students in a timely manner. Course instructors will provide students with information in writing at the beginning of each course that describes the grading policies and procedures including but not limited to evaluation criteria, expected time needed to grade individual student examinations and type of feedback they will provide.

Class grades are due to the Registrar by the Friday following the week of finals. However, on those occasions when a grade has not been submitted by the deadline, the following procedure shall be followed:

1) The Department\(^1\)/Program Coordinator\(^2\) will immediately contact the Instructor requesting the missing grade, with a copy to the Program Director and Registrar.
2) If the grade is still overdue by the end of next week, the Department\(^1\)/Program Coordinator\(^2\) will email the Department Chair directly, with a copy to the Instructor and Program Director requesting resolution of the missing grade.
3) If, after an additional week the grade is still outstanding, the student or Department1/Program Coordinator2 may petition the Office of Graduate students for final resolution.
1 For courses that are run by a specific department.
2 For the conjoined courses (course number is preceded by CON_ that are run by Graduate Studies.

Academic Honesty

Academic honesty is required in order to pass this course. Students are encouraged to help each other; nevertheless, all quizzes, written assignments and presentations must be the work of the individual student. Literature and resources (including Internet resources) employed in fulfilling assignments must be cited.

Likewise, students are expected not to collaborate on the answers to homework problems, although discussion of the concepts involved and working of similar problems together is permitted.

See http://www.ohsu.edu/xd/education/library/research-assistance/plagiarism.cfm?WT_rank=1 for information on code of conduct for OHSU and http://www.ohsu.edu/xd/education/teaching-and-learning-center/for-students/index.cfm for more information on citing sources and recognizing plagiarism.

In an effort to uphold the principles and practice of academic honesty, faculty members at OHSU may use originality checking systems such as Turnitin to compare a student’s submitted work against multiple sources.

To protect student privacy in this process, it will be necessary to remove all personal information, i.e. student name, email address, student u-number, or any other personal information, from documents BEFORE submission.

Copyright Information

Every reasonable effort has been made to protect the copyright requirements of materials used in this course. Class participants are warned not to copy, audio, or videotape in violation of copyright laws. Journal articles will be kept on reserve at the library or online for student access. Copyright law does allow for making one personal copy of each article from the original article. This limit also applies to electronic sources.

To comply with the fair use doctrine of the US copyright law, Sakai course sites close three weeks after grades are posted with the Registrar. Please be sure to download all course material you wish to keep before this time as you will have no further access to your courses.
Use of Sakai

This course will have an online component, which can be accessed through Sakai, OHSU’s online course management system. For any technical questions or if you need help logging in, please contact the Sakai Help Desk.

Hours: Sakai Help Desk is available Mon – Fri, 8 am – 10 pm and weekends and holidays 12 pm – 5 pm.

Contact Information:
(Toll-free) 877-972-5249
(Web) http://atech.ohsu.edu/help
(Email) sakai@ohsu.edu

Student Access

OHSU is committed to providing equal access to qualified students with disabilities. Student Access determines and facilitates reasonable accommodations, including academic adjustments and auxiliary aids, for students with documented disabilities. A qualified student with a disability is a person who meets the academic and technical standards requisite to admission or participation in a particular program of study. As defined by the Americans with Disability Act (ADA), a person with a disability has a physical or mental impairment that substantially limits one or more major life activities of the individual. This may include, but is not limited to, physical conditions, chronic health issues, sensory impairments, mental health conditions, learning disabilities and ADHD. Student Access works with students with disabilities from all of OHSU’s educational programs and at each campus.

Each school has an assigned Program Accommodation Liaison (PAL), who acts as an “in-house” resource for students and faculty concerning access issues for students with disabilities. The PAL works in collaboration with Student Access to implement recommended accommodations for students with disabilities. It is recommended that you contact Student Access to consult about possible accommodations if you a) received disability accommodations in the past, b) begin experiencing academic difficulties, and/or c) are given a new diagnosis from your healthcare provider.

Learn more about Student Access:
Phone: 503-494-0082
(Web) www.ohsu.edu/student-access
(Email) studentaccess@ohsu.edu

Commitment to Equity and Inclusion

Oregon Health & Science University is committed to creating and fostering a learning and working environment based on open communication and mutual respect. If you encounter sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin or ancestry, veteran or military status, sex, marital status, pregnancy or
parenting status, sexual orientation, gender identity, disability or any other protected status please contact the Affirmative Action and Equal Opportunity Department at 503-494-5148 or aaeo@ohsu.edu. Inquiries about Title IX compliance or sex/gender discrimination and harassment may be directed to the OHSU Title IX Coordinator at 503-494-0258 or titleix@ohsu.edu

DMICE Communication Policy

1. If the syllabus directs the student to contact the TA before contacting the instructor, the student should do so. Otherwise, the student should contact the instructor and allow 2 business days (not including weekends) for a response.
2. If the student does not receive a response from the instructor within 2 business days, s/he should contact the TA (if there is one). When contacting the TA s/he should cc the instructor and Diane Doctor at doctord@ohsu.edu.
3. If a student does not receive a response from the TA within 1 business day (not including weekends), s/he should contact Diane Doctor at doctord@ohsu.edu and cc the instructor and the TA.
4. If Diane does not reply within 1 business day (not including weekends), the student should contact Andrea Ilg at ilgan@ohsu.edu.
5. Students having difficulties with Sakai should contact the Sakai Help Desk at sakai@ohsu.edu or at (877) 972-5249. Sakai help is available M-F from 8am to 10-pm and weekends from Noon to 5pm. Do not contact the instructor.