Valparaiso University

IT-603 Spring 2021
Information Management

Dates: 01/25-05/14/2021	**MIXED HYBRID MWF 12:40-1:30 pm** • Monday: Live Zoom • Wednesday: Asynchronous • Friday: In Person GEM-125	**Location:** GEM-125 and http://blackboard.valpo.edu
Instructor: Sonja Streuber	**Office Hours:** M-F 8am-8pm on Google Hangouts (text, voice, video)	**Contact:** sonja.streuber@valpo.edu

Introduction

Welcome to IT-603, Information Management! This course examines data structures, file organizations, concepts and principles of database management systems (DBMS), as well as data analysis, database design, data modeling, database management and database implementation. It introduces entity relationship modeling, the Structured Query Language (SQL), data normalization, and database design. Using MySQL as main implementation vehicle, this course provides hands-on experience in database design and implementation through assignments and lab exercises. Advanced database concepts such as transaction management, distributed databases, multi-tier client/server architectures and web-based database applications are also introduced. Other DBMSs studied include MS Access and NoSQL/ Graph systems such as MongoDB, and Neo4J.

Learning Objectives

Students learn about database design and programming, with a major focus on the relational model and SQL (Structured Query Language). With that in mind, the outcomes of this course are to:

1. Describe fundamental data and database concepts
2. Compare and contrast the relational database model with other database models
3. Explain and use the database development lifecycle
4. Design databases using data modeling and data normalization techniques
5. Solve problems by constructing database queries using the Structured Query Language
6. Develop insights into future data management tool and technique trends
7. Critique the effectiveness of Database Management Systems in computer information systems

Topics Covered

- Database environment and development
- MySQL: The relational database model
- Intro to Structured Query Language (SQL) and the SQL SELECT statement
- Advanced SQL: WHERE with operators, aggregates, sub-selects, views, table Joins
- SQL Programming: Triggers & Stored Procedures
- Transaction Management and User Access
- Client/ Server and Distributed DBMSs, DBMS Integration

- Data Modeling: Business Rules, Conceptual, Logical, and Physical Design; Normalization
- Other DBMSs: MongoDB and Neo4J

Course Format, Participation, and Attendance Requirement

The format for this course is MIXED HYBRID. This means that there will be a live Zoom session on Mondays, an asynchronous session on Wednesdays, and we will meet in-person on Friday during class time (livestreamed and recorded for those who decide to attend remotely). Please make every effort to attend live at least once a week.

Each Sunday evening, a communication from the instructor on Blackboard outlines the goals and tasks for the week. Generally, the work rhythm in this course is as follows:

- Monday: First weekly module--readings and videos with content-based quiz, Perusall annotations, Flipgrid, or other activity, due on Blackboard by 11:59 pm CST. Estimated time: 2 hours. Courses specified as Mixed Hybrid meet for a Live Discussion on Zoom.
- Wednesday: Second weekly module--readings and videos with application-based quiz and/ or collaborative assignment or discussion post, due on Blackboard by 11:59 pm CST. Estimated time: 2-3 hours
- Friday: Third weekly module--weekly lab assignment due on Blackboard by 11:59 pm CST. Estimated time: 3 hours. Courses with a physical attendance requirement meet in-person in the assigned classroom during the assigned class time. If student enrollment exceeds the capacity of the classroom, you will be assigned a day for your rotation.

ATTENDANCE POLICY: Due to COVID-19, physical attendance in any course designated as in-person on-site is **entirely optional**.

- If you decide to attend class in person, in keeping with the Valparaiso University Code of Student Conduct, you must self-monitor and submit a daily health status through the CampusClear app before coming to campus, and you must follow the Campus COVID Classroom Conduct outlined below once you are inside the classroom.
- If you suspect you have been exposed to COVID-19, or if you exhibit symptoms of COVID-19, please do not come to class. Instead, call the Student Health Center at 219-464-5060 and follow their directions.
- If you are ill or in one of the vulnerable populations as defined in Valparaiso University's COVID-19 Campus Safety Plan (p.17), please know that all class meetings will be livestreamed and/ or recorded and available on Blackboard. The course can be taken fully online. Do not risk your health by trying to attend class in person if it is not safe for you or others.
- If you anticipate that COVID will disrupt your ability to participate in the course and complete all assignments on time, please contact me, and we will work out a plan to help you succeed.

IF YOU ARE AN INTERNATIONAL STUDENT, IT IS YOUR RESPONSIBILITY TO VERIFY WITH YOUR ADVISOR AND WITH OIP THAT YOU ARE IN COMPLIANCE WITH APPLICABLE VISA REGULATIONS BEFORE ENROLLING IN THIS ONLINE COURSE.

Textbooks & Materials

- Oppel, Andy (2011). *Databases Demystified*. 2nd edition. ISBN 978-0-07-174799-8.

- A computer (Windows, Mac, or Linux) with Oracle Virtualbox, so you can run the Virtual Machines distributed with this course.
- A webcam to use with Screencast-o-matic

Workload

This 3-credit course requires SIGNIFICANT individual and teamwork. Plan on spending 8-9 hours a week on studying and applying the material. You will be completing the following tasks every week:

- **Monday Moves (10 points each = 150 points).** After studying the first module of the week, you will complete a short assessment that allows you to demonstrate your understanding of what you have just studied. That can be commenting on assigned reading or video viewing in Perusall or Flipgrid, a quiz in Blackboard, researching a topic and posting it on the Discussion Board, or even posting a video of you performing an exercise--or a combination of these. Monday Work varies from week to week, but always focuses on the assigned materials. **It CANNOT be made up and is due by 11:59 pm CST on the Monday of the week in which it is given**.
- **Wednesday Work (10 points each = 150 points).** Typically, Wednesday Work consists of one or two short coding problems to help you explore and practice your new skills for any of the end-of-week labs. This is collaborative and shared work, often in a Discussion thread with practice code (due Wednesdays) and responses or peer reviews (due Thursdays), or in Flipgrid format. **Wednesday Work CANNOT be made up and is due by 11:59 pm CST on the Wednesday (and Thursday as needed) of the week in which it is given.**
- **Friday Fun (10*10 points each=100 points):** Some weeks contains a lab assignment about a theoretical, practical, or programming problem. Students will be assigned a team with which they may collaborate, but all students will submit their own solution. Solutions must posted to Blackboard by 11:59 pm CST on FRIDAY. NO EMAIL SUBMISSIONS ACCEPTED. There are 11 labs on the syllabus; the lowest lab grade will be dropped.
- **Final Exam (100 points):** The final exam will be an individual set of tasks performed on a database that you will receive 24 hours before the exam opens. Please consult the workplan below for the course final date and time. You will have 110 minutes to do the following:
    - Solve the course final tasks you are given and practice typing the commands
    - In a max. 15-minute video, record your solution path with Screen-cast-o-matic (and webcam, in which you explain what you are doing and typing and why) and post your video to YouTube, then paste the YouTube link into the assignment on Blackboard. YOU MUST PRACTICE AND TIME THIS A FEW TIMES. UPLOADING A 15-MINUTE VIDEO TAKES TIME!

  NOTE: You are responsible for the quality of your WiFi. Due to FERPA, no submissions by email are accepted. NO EXCEPTIONS.

You can earn up to 500 points in this course. Extra credit assignments can help you get there faster.

Letter Grade Conversion:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
> 93%	90-93%	87-89.9%	83-86.9%	80-82.9%	77-79.9%	73-76.9%	70-72.9%	67-69.9%	63-66.9%	60-62.9%	< 60%

Assignment Submission, Late Work, and Academic Honesty

- **Assignment Submission:** All Assignments must be submitted on Blackboard. **BECAUSE OF FERPA LEGISLATION, I cannot accept any emailed assignments.**
- **Late Work:** Work is considered late if not posted to Blackboard by 11:59 pm CST of the day on which it is due.
  - **ONLY Friday Fun labs may be submitted late** and will lose 50% of the grade. Any Friday labs that you did not complete, but still want to submit for grading MUST be submitted by the **WEDNESDAY before the last day of instruction**, 11:59 pm CST.
  - **Since Monday and Wednesday quizzes, tests, practice code/ peer review exercises, or discussion assignments are timebound, they can NOT be made up at a later date.**
- **Academic Honesty:** This course upholds the Valparaiso University Honor Code, which permits students to do their academic work in an atmosphere of responsible freedom. For you, this means that **all work you submit for this course must be your own**.
  - **For labs and Discussions (Practice Code/ Peer Reviews):** If you decide to include anyone else's words or code (from blogs, webpages, coding forums like GitHub or Stackoverflow, purchased solutions, etc.), you must:
    1. Give a clear **source citation** (including the exact location from which you copied these words or lines of code)
    2. Include an **explanation in your own words** of what the cited passage means or what the copied code does, why it works, and why it is better than your own.
  - **For Midterm and Final:** You are allowed to use the course book, the instructor slides, and the work you have submitted in this course as authorized aid. You are NOT allowed to use any information from the internet or your friend/ current or former colleague/ pet rock or any source other than what is defined as authorized aid. Cell phones and smart watches must be left on a designated table in the room.

  When the definition of unauthorized aid is in question, it is your responsibility to clarify your understanding of it with the instructor. Ignorance is not a valid excuse for violations of the Honor Code. Students should report suspected violations to the Honor Council.

  In addition, you must write and sign with your name the following statement on all course work:

  I have neither given nor received, nor have I tolerated others' use of unauthorized aid.

  For more information about Valparaiso University's Academic Honor Code, case review cycles, and potential penalties, please refer to http://www.valpo.edu/student/honorcouncil/index.php

Schedule

Week	Start Date	Weekly Topics	Reading and Other Preparation (incl. materials on Blackboard)	Graded Work Due
1	1/25	Course Intro, database environment and development Exploring MySQL	Oppel 1 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points)
2	1/31	The relational database model	Oppel 2 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_01 (10 points)
3	2/07	Intro to Structured Query Language (SQL) The SQL SELECT statement	Oppel 4 Other materials in Blackboard Khan Hour of Code	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_02 (10 points)
4	2/14	Advanced SQL: WHERE with operators, aggregates, sub-selects, views	Oppel 4 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_03 (10 points)
5	2/21	Advanced SQL: Table Joins	Oppel 4 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_04 (10 points)
6	2/28	SQL Programming: Triggers & Stored Procedures	Oppel 8 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_05 (10 points)
7	3/07	Transaction Management and User Access **MIDTERM**	Oppel 10, 11 Other materials in Blackboard **MIDTERM**	Monday Work (10 points) Wednesday Work (10 points) **MIDTERM**
8	3/14	Client/ Server and Distributed DBMSs Systems Integration	Oppel 9, 10 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points)

				Friday Lab_06 (10 points)
9	3/21	Database Analysis—Data Modeling: Business Rules, Conceptual and Logical Design	Oppel 5 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_07 (10 points)
10	3/28	Logical Database Design—Normalization and Physical Design	Oppel 6, 7 Other materials in Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_08 (10 points)
11	4/07	NoSQL Database Systems: MongoDB Part 1	As posted on Blackboard Virtual Machine	Monday Work (10 points) Wednesday Work (10 points)
12	4/11	NoSQL Database Systems: MongoDB Part 2	As posted on Blackboard Virtual Machine	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_09 (10 points)
13	4/18	Graph Databases: Neo4J Part 1	As posted on Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_10 (10 points)
14	4/25	Data Analytics with Graph Databases: Neo4J Part 2	As posted on Blackboard	Monday Work (10 points) Wednesday Work (10 points)
15	5/02	Course Summary, Course Final Preparation	As posted on Blackboard	Monday Work (10 points) Wednesday Work (10 points) Friday Lab_11 (10 points)
Final	5/12	Course Final Exam due on Wednesday, 5/12 at 2:50 pm CST. **No late submissions will be considered.**	**USE**: Books&slides& assignments **DO NOT USE**: Friends, internet, etc.	**Course Final Exam**

APPENDIX A: University Policies

Diversity and Inclusion

Valparaiso University aspires to create and maintain a welcoming environment built on participation, mutual respect, freedom, faith, competency, positive regard, and inclusion. This course will not tolerate language or behavior that demeans members of our learning community based on age, ethnicity, race, color, religion, sexual orientation, gender identity, biological sex, disabilities (visible and invisible), socio-economic status, or national origin. The success of this class relies on all students' contribution to an anti-discriminatory environment where everyone feels safe, welcome, and encouraged to engage, to explore, and ultimately, "to embark on a rewarding personal and professional journey" (Pres. Heckler).

Title IX

Valparaiso University strives to provide an environment free of discrimination, harassment, and sexual misconduct (sexual harassment, sexual violence, dating violence, domestic violence, and stalking). If you have been the victim of sexual misconduct, we encourage you to report the incident. If you report the incident to a University faculty member or instructor, she or he must notify the University's Title IX Coordinator about the basic facts of the incident. Disclosures to University faculty or instructors of sexual misconduct incidents are not confidential under Title IX. Confidential support services available on campus include: Sexual Assault Awareness & Facilitative Education Office "SAAFE" (219-464-6789), Counseling Center (219-464-5002), University Pastors (219-464-5093), and Student Health Center (219-464-5060). For more information, visit http://www.valpo.edu/titleix/ .

Access and Accommodation Services

The Access & Accommodations Resource Center (AARC) is the campus office that works with students to provide access and accommodations in cases of diagnosed mental or emotional health issues, attentional or learning disabilities, vision or hearing limitations, chronic diseases, or allergies. You can contact the office at aarc@valpo.edu or 219.464.5206. Students who need, or think they may need, accommodations due to a diagnosis, or who think they have a diagnosis, are invited to contact AARC to arrange a confidential discussion with the AARC office. Further, students who are registered with AARC **are required to contact their professor(s) if they wish to exercise the accommodations** outlined in their letter from the AARC.

Academic Support

To get help, use the Academic Success Center (ASC) online directory (valpo.edu/academicsuccess) or contact the ASC (academic.success@valpo.edu) to help point you in the right direction for academic support resources for this course. Valpo's learning centers offer a variety of programs and services that provide group and individual learning assistance for many subject areas. These learning centers include:

- Tutoring Lab: Serves the academic needs of undergraduate and graduate students – tutors offer suggestions on organization of papers, assist in research and citations, and help in understanding difficult assignments. Additional one on one tutoring is also available.
- Writing Center: Writing Consultants provide proofreading and editing assistance for papers and assignments.

Class Cancellations

Notifications of class cancellations will be made through Blackboard with as much advance notice as possible. It will be both posted on Blackboard and sent to your Valpo e-mail address. If you don't check your Valpo e-mail account regularly or have it set-up to be forwarded to your preferred e-mail account,

you may not get the message. Please check Blackboard and your Valpo e-mail (or the e-mail address it forwards to) before coming to class.

Emergencies

VU's Emergency Notification System (ENS) uses multiple forms of communication, including e-mail, building alarms, outdoor sirens, message boards, computer alerts, Twitter, and public address messaging. Please review the specific procedures for this class found in Blackboard. Remember: "Siren inside, GO outside; Siren outside, GO inside." To evacuate, gather your personal belongings quickly and proceed to the nearest exit. Do not use the elevator. To shelter in place, move away from the windows and stay low to the ground; lock or barricade the door if there is a threat of violence.

APPENDIX B: Learning Objectives

Student Learning Objectives—Graduate School

1. Students will understand and practice methods of inquiry and strategies of interpretation within the student's field of study.
2. Students will master the knowledge and skills pertinent to the student's field of study.
3. Students will effectively articulate the ideas, concepts, and methods through written and oral presentation.
4. Students will understand the connection between their knowledge and skills on the one hand and their professional identity, responsibilities, and demands on the other.
5. Students will integrate knowledge and methods of their study with cognates and other disciplines.
6. Students will study, reflect upon, and practice ethical behavior and cultural sensitivity as they relate to professional and personal responsibility.

Student Learning Objectives—Information Technology Program

1. To understand and practice methods of inquiry and strategies of interpretation within the student's field of study.
   1A. Students will master several programming environments.
   1B. Students will learn to identify and isolate problems.
2. To master the knowledge and skills pertinent to the student's field of study.
   2A. Students will acquire an extensive technology related vocabulary.
   2B. Students will become comfortable using a wide range of technology environments.
3. To effectively articulate the ideas, concepts, and methods through written and oral presentation.
   3A. Students will be taught how to make formal, oral presentations and be required to give 6 such presentations during their program.
   3B. Students will write numerous, thorough papers requiring extensive research. They will be required to use the services on the writing center.
4. To understand the connection between their knowledge and skills on one hand and their professional identity, responsibilities, and demands on the other.
   4A. Students will understand the implications of legal and professional regulations as they relate to information technology.
   4B. Students will study how technology can be made available to people that are traditionally less advantaged.
5. To integrate knowledge and methods of their study with cognates and other disciplines.
   5A. Students will learn techniques of modeling data from other disciplines.
   5B. Students will study human factors in IT.
6. To practice ethical and cultural sensitivity as it relates to professional and personal responsibility.
   6A. Students will examine a wide range of ethical issues related to technology and the potential effects on people and the environment.
   6B. Students will explore the relationship between IT and ethnic and cultural diversity.