INF 202: Introduction to Data and Databases (3 credit hours)
Spring 2015, Class number 7282

Instructor: Norman Gervais
Office location: BA 313
Office hours: Mondays 11:30-1:00 and Wednesdays 11:30-12:15 or By Appointment
Contact information: ngervais@albany.edu
Office Phone: 518-442-3173

Course Information
Meeting time: Mondays, Wednesdays, and Fridays 10:25-11:20
Meeting location: SL0G02

Course description from *Undergraduate Bulletin*:
This course introduces students to data and databases. It covers both long-standing relational (SQL) databases and newly emerging non-relational (NoSQL) data stores. The nature of data, Big Data, intellectual property, system lifecycle, and development collaboration are also explored. Team-based activities alternate with hands-on exercises.

Prerequisites
The prerequisite course for INF 202 is I CSI 101, 105, 110 or 201 or B ITM 215. This course will build on several of the primary concepts from these courses and add several more.

Not open to students who are taking or have completed I CSI 410 or 411 or B ITM 331.

Course Goals
By the end of the semester, you should be able to:

- Recognize the importance, issues, and potential uses of data in business, government, and society as a whole.
- Analyze a data collection/discovery/extraction problem, highlighting its most important challenges.
- Design a database solution.
- Distinguish between different types of databases.
- Query, at a basic level, a database solution.

Readings
Required readings
Beginning Database Design: From Novice to Professional, 2nd edition
Clare Churcher; Publisher: Apress; ISBN-13: 978-1430242093; Price: ~35.00.

NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence
Pramod J. Sadalage, Martin Fowler; Publisher: Addison-Wesley Professional; ISBN-13: 978-0321826626; Price: ~$40.00.

Supplemental readings
Will be distributed via Blackboard or in class as appropriate

Additional Materials
Students will require access to a computer, a modern generation browser, various software, and the Internet.

Course Approach
I believe (and research shows) that students learn best from interacting with texts and with other learners, engaging in challenging tasks, being held accountable for their work, and receiving frequent feedback on their progress. As a result, this course was designed with these elements in mind.

Course Policies

Attendance
Attendance is mandatory in every class and students are expected to arrive on time. Your in-class performance is key to your success in this course. Attendance, itself, is not graded. Instead, graded in-class activities and assignments constitute an important part of the course grade. It is very difficult to maintain a passing average without consistent attendance. Missing class means the student earns an automatic zero for the activities or assignments. Because of the nature of the assignments, no make-up opportunities will be available.

Tardiness
Missing an assignment or activity that happened before a student arrives or after a student leaves also earns a zero. No make-up opportunities will be available.

If you know that it will be difficult for you to consistently get to class on time and stay for the entire period, you should take this course at a time that better fits your schedule. Being late frequently will guarantee a low or failing grade for the course.

Make-up Policy
There are generally no make-up opportunities for missed assignments except in extenuating circumstances. Instead of asking to make up missed work, please see the course 'safety valves' described below.

Since there will be occasions in your life when missing a class meeting is simply unavoidable, this course has a no-fault safety valve.

Safety valve 1
Your lowest in-class activity score will be dropped. So, if you must miss an in-class activity for any reason, it will be possible to drop the zero you would automatically receive for missing the activity or quiz. Be careful not to waste your drop on frivolous things early in the semester, since you may need it if you catch a cold or need to leave town for a day later in the semester. If you do not use your safety valve for a missed activity, you will be able to use your safety valve to improve your grade, by dropping your lowest activity score.

Plan carefully for classes that you know you will need to miss. Work, religious practice, sports team travel, military duty, club activities, fraternity/sorority obligations, family responsibilities, assignments for other courses, and even brief illnesses, etc.—these are your

responsibility to manage by using your safety valve. If you need to be out of class for any of these, make sure you have conserved your droppable grade to cover the class you need to miss.

Safety valve 2
If you become seriously ill during the semester, or become derailed by unforeseeable life problems, and have to miss so many assignments that it will ruin your grade, schedule a meeting with me in order to make arrangements for you to drop the course to save your grade point average. Don't wait until it's too late to see me when you get in trouble.

Late homework
Homework is due on the due date at the specified time, in class or submitted through Blackboard, depending on the assignment. Late assignments will be accepted, but at the cost of a full letter grade for missing the first, in-class deadline, and an additional letter grade for each additional 24 hours late up to 48 hours late, at which point an automatic 0 will be assigned. In-class activities, assessments, and the project and its associated content will not be accepted late.

Extra Credit
There may be extra credit work. All students will be expected to complete, and be graded on, the same set of assignments. Details to follow. All extra-credit opportunities are capped at no more than 5 points on your overall grade.

Withdrawal from the course
The drop date for the Spring 2015 semester is April 7 for undergraduate students. That is the last date you can drop a course and receive a 'W'. It is your responsibility to take action by this date if you wish to drop the course. In particular, grades of "incomplete" will not be awarded to students because they missed the drop deadline.

Cell phones & laptops
Please make sure your electronic devices are turned off before entering the classroom unless we are doing a class exercise where they are helpful. Use of phones, tablets, computers, etc. for non-class purposes during class will count against you in your class participation grade. While you may be using computers in class, texting, using Facebook, *etc.*, are not appropriate uses of class time and your instructor-evaluated grade will suffer for it.

Incompletes
As per the Undergraduate Bulletin, the grade of Incomplete (I) will be given "only when the student has nearly completed the course requirements but because of circumstances beyond the student's control the work is not completed." A student granted an incomplete will make an agreement specifying what material must be made up, and a date for its completion. The incomplete will be converted to a normal grade on the agreed upon completion date based upon whatever material is submitted by that time.
Important: Incompletes will not be given to students who have not fulfilled their classwork obligations, and who, at the end of the semester, are looking to avoid failing the course. This is asking for special treatment.

Academic Integrity
It is every student's responsibility to become familiar with the standards of academic integrity at the University. Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity. See http://www.albany.edu/undergraduate_bulletin/regulations.html

Course work and examinations are considered individual exercises. Copying the work of others is a violation of university rules on academic integrity. Individual course work is also key to your being prepared and performing well on tests and exams. Forming study groups and discussing assignments and techniques in general terms is encouraged, but the final work must be your own work. For example, two or more people may not create an assignment together and submit it for credit. If you have specific questions about this or any other policy, please ask.

The following is a list of the types of behaviors that are defined as examples of academic dishonesty and are therefore unacceptable. Attempts to commit such acts also fall under the term academic dishonesty and are subject to penalty. No set of guidelines can, of course, define all possible types or degrees of academic dishonesty; thus, the following descriptions should be understood as examples of infractions rather than an exhaustive list.
  ➢ Plagiarism
  ➢ Allowing other students to see or copy your assignments or exams
  ➢ Examining or copying another student's assignments or exams
  ➢ Lying to the professor about issues of academic integrity
  ➢ Submitting the same work for multiple assignments/classes without prior consent from the instructor(s)
  ➢ Getting answers or help from people, or other sources (*e.g.* research papers, web sites) without acknowledging them.
  ➢ Forgery
  ➢ Sabotage
  ➢ Unauthorized Collaboration (just check first!)
  ➢ Falsification
  ➢ Bribery
  ➢ Theft, Damage, or Misuse of Library or Computer Resources

Any incident of academic dishonesty in this course, no matter how "minor" will result in:

1. No credit for the affected assignment.
2. A written report will be sent to the appropriate University authorities (*e.g.* the Dean of Undergraduate Studies)
   And may result in:
3. One of –
   o A final mark reduction by *at least* one-half letter grade (*e.g.* B → B-, C- → D+),
   o A Failing mark (E) in the course, and referral of the matter to the University Judicial System for disposition.

Policies from Undergraduate Bulletin:
http://www.albany.edu/undergraduate_bulletin/regulations.html

Responsible Use of Information Technology
Students are required to read the University at Albany Policy for the Responsible Use of Information Technology available at the ITS Web Site:
https://wiki.albany.edu/display/public/askit/Responsible+Use+of+Information+Technology+Policy

Time Management
For every credit hour that a course meets, students should expect to work 3 additional hours outside of class every week (3 x 3= 9). For a three-credit course you should expect to work 9 hours outside of class every week. Manage your time effectively to complete readings, assignments, and projects.

Available Support Services

Reasonable accommodation
Reasonable accommodation will be provided for students with documented physical, sensory, cognitive, learning and psychiatric disorders. If you believe you have a disability requiring accommodation in this class, please notify the Director of Disability Resource Center (Campus Center 137, 442-5490). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations. In general, it is the student's responsibility to contact the instructor at least one week before the relevant assignment to make arrangements.

Grading
The grade breakdown for the course is:

- Individual Assignments: 30%
- Final Project: 20%
- In-Class Exams: 30%
- In-Class Activities and Reading Quizzes (unannounced): 20%

A-E graded:

93 – 100% A	77 – 79% C+	60 – 62% D-
90 – 92% A-	73 – 76% C	0 – 59% E
87 – 89% B+	70 – 72% C-	
83 – 86% B	67 – 69% D+	
80 – 82% B-	63 – 66% D	

Course Outline and Schedule

The following schedule of lecture topics is preliminary and may be changed as the semester progresses. The specific homework and lab assignments and materials will be provided in Blackboard. Students are expected to have read the listed material before it is covered in class.

Week	Major Topics	Readings Due
19-Jan	• Course introduction • Algorithms	Syllabus
26-Jan	• Intellectual property • Command line and VIM introduction	See Blackboard
2-Feb	• Intro to databases • Use cases • Data model	Churcher Ch. 1,2 and 3
9-Feb	• Cardinality • Attributes, classes, and relationships	Churcher Ch 4 and 5
16-Feb	• Keys • Normalization	Churcher 7, 8, and 9
23-Feb	• Querying	Churcher Ch. 10
2-Mar	• Creating and manipulating databases	TBD
9-Mar	• Relational databases wrap up • Exam #1	TBD
16-Mar	• NO CLASS – spring break	
23-Mar	• Intro to NoSQL • Key-Value databases	Sadalage and Fowler Ch. 1,2,3,5 and 8
30-Mar	• Document, Column-Family, and Graph databases	Sadalage and Fowler Ch. 9,10,11
6-Apr	• NO CLASS – Mon, April 6 classes suspended • Data in organizations	TBD
13-Apr	• Data in society	TBD
20-Apr	• Information management (tentative)	TBD
27-Apr	• Exam #2 • CCI Showcase – April 29 • Final project	None
4-May	• Final project • Last Day of Class, May 6 • Final project due May 6 by 11:59pm	None