# Syllabus for COMP 378: Database Systems

Spring 2022

Dickinson College

Instructor: John MacCormick

### Learning goals

Students will

* be able to query relational databases;
* understand the mathematical foundations of database design;
* be able to implement application programs that interact with database systems;
* understand social, legal and ethical issues surrounding the accumulation, storage and manipulation of data.

### Inclusivity

Everyone in the course belongs equally to our classroom community. The instructor aims to create an atmosphere where everyone feels a sense of belonging and feels free to ask questions.

Teaching methods

* Required readings of textbook and classic papers
* Lectures and class discussions
* Research and presentation on recent advances in database research
* Homework assignments and exams for core content
* Final project on student-developed database application with presentation and report

When and where

* Classes: Monday and Thursday 1:30–2:45pm in Tome 231.
* Office hours: see the instructor's [office hour webpage](http://users.dickinson.edu/~jmac/office-hours.html).

### Books

Electronic or print version of the following textbook is required (rent or buy; either is fine):

* *Principles of Database Management: The Practical Guide to Storing, Managing and Analyzing Big and Small Data*, by Wilfried Lemahieu, Seppe vanden Broucke, and Bart Baesen. Cambridge University Press; 1st edition. ISBN: 1107186129
* Further details are available at the textbook website, <https://www.pdbmbook.com>

### Assessment and grading

* Final grade will comprise:

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| Core content assignments (CC0-CC6) | 35% |
| Research paper assignments (RP1-2) | 15% |
| Classic paper assignments (CP1-2) | 10% |
| Midterm exams (2 x 10% each) | 20% |
| Final project assignments (FP1-4) | 20% |

* **Core content assignments:** There will be approximately 8 core content assignments (CC0-CC6), due at the start of class on the dates specified on the class schedule. All core content assignments must be submitted electronically to Moodle. Questions that require written or typed answers must be submitted in a single PDF document for each assignment. Separate files can be submitted for Java source code and SQL source code. Any reasonable formatting may be used; in particular, digitized handwritten solutions are acceptable. Only a random subset of core content questions will be graded for correctness; the remainder of questions will be graded on completeness only. The weighting of core content assignments is not equal. The weight of a core content assignment will be proportional to the total number of points of the questions graded on that assignment, plus a completeness component. In all cases, it is the responsibility of the student to consult the provided solutions and understand the correct approach to every question, whether or not it was graded. Core content assignments must be completed individually.
* **Research paper assignments:** Each student will choose a recently published database research paper and give a presentation describing the research. There will be an early milestone assignment describing the choice of paper (RP1) and the presentation itself (RP2). Presentations will take place in class on **Thursday, March 31** and **Monday, April 4**. Research paper assignments may be completed individually or in a team of two, but you may not work with the same partner for the research paper and the final project.
* **Classic paper assignments:** there will be two in-class discussions of classic database research papers, with associated assignments CP1 and CP2. For each assignment, students must read the paper and post discussion questions on Moodle in advance. Participation in the class discussion is also a graded component for these assignments. A student who misses the in-class discussion for any reason (whether the absence is excused or not) must submit a blog post on the discussion topic before the start of the subsequent class; details are provided on the course webpages. The class discussions will take place on **Monday, March 28** and **Thursday, April 14**. Classic paper assignments must be completed individually.
* **Midterm exams:** There will be two midterm exams, beginning in class on **Thursday, March 3** and **Thursday, April 21**. These will be open-note, open-web, take-home exams which must be completed within 24 hours. Students may consult any printed or digital materials and may perform web searches. However, no communication with other humans is permitted. Details are provided on a separate webpage.
* **Final project and presentation:** Students will complete a final project that includes the design and implementation of a database and a database application of their own choosing. Components of the final project include some early milestone reports (FP1, FP2), a final presentation (FP3), and a final report (FP4). Presentations will take place during the final exam slot on **Tuesday, May 10, 2-5pm**. The final project can be completed individually or in a team of two, but you may not work with the same partner for the research paper and the final project.
* Final scores will be converted to grades according to the following thresholds (or possibly more generous thresholds): 93%=A; 90%=A-; 87%=B+; 83%=B; ...; 60%=D-.

### What will be on the exam?

Technically speaking, any material covered in any lecture, reading, or core content assignment is eligible to appear in the midterm exams. In practice, a strong majority of exam questions will be similar to a core content question, an example done in class, or other assigned practice questions.

### Amount of work

College policy recommends approximately 3 hours of independent work for every hour of class time. Our class meets for 2.5 hours per week. Therefore, you should expect to spend 7-9 hours per week (outside of class time) on this course.

### Plagiarism, copying, and collaborating

The College's standard policy on plagiarism applies and you should be familiar with it, but here are some key points that apply particularly to this course:

* All work must be your own.
* Never copy work from someone else or allow your own work to be copied.
* You may not copy or consult assignment solutions from any source, including online repositories or solutions provided for previous instances of the course. Exception: after submitting a given core content assignment, you may consult the solutions to that assignment provided for this instance of the course, after they have been posted to Moodle.
* If you use exact words taken from any source, you must use quotation marks and cite the source.
* Students are encouraged to help each other understand concepts, including concepts that apply to homework assignments. However, all work must still be your own. So if you discuss a problem with someone, you must destroy any written or electronic material that results from the discussion, and re-create it later on your own.
* Be especially careful not to copy computer code from another student, or from the internet (unless an assignment question specifically states that it is permitted—and even then, state the origin of any copied code clearly using a comment in your source code). Sharing or copying computer code is easy and often tempting, but it is not permitted and will suffer the same penalties as any other form of cheating.

### Accommodations

The instructor will follow college policy on [Accommodating Students with Disabilities](http://users.dickinson.edu/~jmac/accommodations.html).

Late Work Policy

Each student is permitted a total of four no-penalty days of lateness for submitted work over the entire semester; every subsequent day of lateness incurs up to a 25% penalty for the late assignment. Late days can be used only in whole day units. Accounting for late days is mostly via an honor system: students should keep count of their late day usage. To use one or more late days on a given assignment, state clearly at the start of your submission how many days you are using, and the total used so far in the semester. Late days cannot be used for assignments that have a real-time component, such as presentations or in-class discussions

Recording and posting of class content

The instructor may record some or all class meetings. If a class is recorded, the content will be made available only to members of the class. Do not share or repost class recordings or other content; doing so would be a breach of Dickinson’s [Community Standards](https://www.dickinson.edu/info/20273/dean_of_students/867/community_standards). Classes may also be recorded for accommodation purposes.