

# CS333: Storage Systems

Syllabus for Spring 2019

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## General Info

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**Instructor:** Bill Jannen  
**Office:** TCL 306  
**Phone:** 597-4509  
**Email:** jannen@cs.williams.edu

**Meetings:** MoTh from 2:35-3:50pm in Schow Computer Room  
**Course Web Page:** <http://www.cs.williams.edu/~jannen/teaching/s19/cs333>

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## Texts

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We will be using the following textbook in this course:

- *Operating Systems: Three Easy Pieces* by Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau.

Additionally, a good C reference is highly recommended. Many copies of the following textbook are on reserve at the Schow Science Library:

- *The C Programming Language, 2nd edition* by Brian Kernighan and Dennis Ritchie. by Brian Kernighan and Dennis Ritchie.

Additional readings will be assigned from various sources, including conference proceedings, research journals, magazines, and textbook excerpts. You may also be required to search out and select resources on your own. Additional readings will be digitally accessible from the course website; they will be accessible while connected to the Williams network (or while off-campus using the library's proxy server).

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## Course Description

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This course will examine topics in the design, implementation, and evaluation of storage systems. Topics include the memory hierarchy; ways that data is organized (both logically and physically); hardware characteristics and the ways that storage hardware influences storage software design; data structures and performance models; and system measurement/evaluation. The course emphasis will be on identifying and evaluating design trade-offs.

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## Course Objectives

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Upon the completion of this course, students:

- should have the ability to speak fluently about current and emerging storage technologies;
- should, when presented with a new storage technology, be able to describe how that technology will fit into or modify the “storage landscape”;
- should be able to critically read texts in the storage literature and understand the texts’ content and arguments;
- should be able to describe and/or use common storage interfaces at the application, OS, and device layers;
- should be comfortable writing system code in C; and
- should be able to analyze the performance of external memory algorithms and data structures.

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## Course Structure

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**Course meetings.** This course will meet twice each week for lecture and discussion. *Attendance at course meetings is mandatory.* There are valid reasons to miss a course meeting, but unexcused absences will significantly reduce the participation component of your final course grade; additionally, missed in-class assignments will not be accepted.

**Reading Assignments.** There will be readings associated with each class, and you should complete all readings before the associated meeting. However, unexpected things happen during the semester. If you are unable to complete the readings, you should still attend the meeting and participate in discussions when able.

**Labs.** Although there is no scheduled laboratory meeting, lab assignments will be an important part of this course. Lab work will be evaluated based on quality, completeness, correctness, and creativity.

Labs are to be completed in accordance with the college and Computer Science department honor codes. Individual assignments will contain additional details/clarification as needed.

If you ever have a question about the honor code, *please ask.* Violating the honor code has serious repercussions; a common outcome of honor code violations, as determined by the honor committee, is course failure.

**Exams.** There will be one midterm and one final exam. Both will be 24-hour, open-book, take-home exams. The mid-term exam will be given on the week prior to spring break and must be submitted before the start of spring break.

**Grading.** Grades for this course will be determined as follows:

Participation and Citizenship:	5%
Lab assignments:	50%
Non-lab submitted work:	15%
Exams:	30%

Assignments within a given category may have different weights.

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## Honor Code

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Uncredited collaborations will be considered a violation of the honor code and will be forwarded to the honor committee. If in doubt of what is appropriate, do not hesitate to ask your instructor. For a full description of the Computer Science Honor Code, please see

<https://csci.williams.edu/the-cs-honor-code-and-computer-usage-policy/>.

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## Workload.

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At Williams, we operate under the course unit system (rather than the credit hour system). You should expect to spend (on average) at least 13 hours per week on the academic and creative work related to class. This includes time spent meeting as a class and working on assignments. The Office of the Registrar explains the relationship of course units to credit hours in greater detail.

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## Course Calendar and Schedule.

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The course calendar and schedule can be found on the course webpage. The course webpage will be regularly updated after each course meeting. As a new course, the content may change in response to course demands. Please check back regularly for updates.