

CSS 343 D
Data Structures, Algorithms, And Discrete Mathematics II
Course type: Face-to-Face

Evaluation Delivery: Online
Evaluation Form: A
Responses: 35/36 (97% very high)

Taught by: Yusuf Pisan
Instructor Evaluated: Yusuf Pisan-T Prof

Overall Summative Rating represents the combined responses of students to the four global summative items and is presented to provide an overall index of the class's quality:

Median 4.4 (0=lowest; 5=highest)	College Decile 5 (0=lowest; 9=highest)
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Challenge and Engagement Index (CEI) combines student responses to several IASystem items relating to how academically challenging students found the course to be and how engaged they were:

CEI: 5.7 (1=lowest; 7=highest)
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SUMMATIVE ITEMS

	N	Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)	Very Poor (0)	Median	DECILE RANK	
									Inst	College
The course as a whole was:	35	40%	43%	17%				4.3	5	6
The course content was:	35	46%	43%	11%				4.4	5	6
The instructor's contribution to the course was:	35	49%	34%	17%				4.5	4	5
The instructor's effectiveness in teaching the subject matter was:	35	43%	34%	20%	3%			4.3	4	5

STUDENT ENGAGEMENT

	N	Much Higher (7)	(6)	(5)	Average (4)	(3)	(2)	Much Lower (1)	Median	DECILE RANK	
										Inst	College
Relative to other college courses you have taken:											
Do you expect your grade in this course to be:	34	15%	15%	21%	32%	6%	6%	6%	4.5	2	3
The intellectual challenge presented was:	34	47%	32%	21%					6.4	9	8
The amount of effort you put into this course was:	34	29%	44%	21%	6%				6.0	7	7
The amount of effort to succeed in this course was:	34	41%	24%	29%	6%				6.1	8	7
Your involvement in course (doing assignments, attending classes, etc.) was:	34	29%	35%	21%	12%	3%			5.9	5	5

On average, how many hours per week have you spent on this course, including attending classes, doing readings, reviewing notes, writing papers and any other course related work?

Class median: 10.8 Hours per credit: 2.2 (N=33)

Under 2	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22 or more
	6%		12%	12%	30%	6%	21%	9%	3%		

From the total average hours above, how many do you consider were valuable in advancing your education?

Class median: 9.3 Hours per credit: 1.9 (N=33)

Under 2	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22 or more
	3%	3%	27%	18%	24%	3%	9%	9%	3%		

What grade do you expect in this course?

Class median: 3.5 (N=33)

A (3.9-4.0)	A- (3.5-3.8)	B+ (3.2-3.4)	B (2.9-3.1)	B- (2.5-2.8)	C+ (2.2-2.4)	C (1.9-2.1)	C- (1.5-1.8)	D+ (1.2-1.4)	D (0.9-1.1)	D- (0.7-0.8)	E (0.0)	Pass	Credit	No Credit
30%	24%	6%	15%	6%	15%	3%								

In regard to your academic program, is this course best described as:

(N=33)

In your major	A core/distribution requirement	An elective	In your minor	A program requirement	Other
67%	24%	3%		6%	

STANDARD FORMATIVE ITEMS

	N	Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)	Very Poor (0)	Median	DECILE RANK	
									Inst	College
Course organization was:	35	34%	54%	9%	3%			4.2	4	5
Clarity of instructor's voice was:	35	23%	34%	31%	11%			3.7	1	1
Explanations by instructor were:	35	37%	29%	31%	3%			4.0	3	4
Instructor's ability to present alternative explanations when needed was:	35	29%	49%	14%	9%			4.1	3	4
Instructor's use of examples and illustrations was:	34	53%	38%	9%				4.6	5	6
Quality of questions or problems raised by the instructor was:	34	41%	44%	15%				4.3	4	5
Student confidence in instructor's knowledge was:	34	59%	35%	6%				4.7	4	5
Instructor's enthusiasm was:	34	53%	35%	9%	3%			4.6	3	4
Encouragement given students to express themselves was:	34	32%	41%	26%				4.1	2	3
Answers to student questions were:	34	38%	47%	12%	3%			4.2	3	4
Availability of extra help when needed was:	34	47%	32%	21%				4.4	4	4
Use of class time was:	34	47%	26%	26%				4.4	4	5
Instructor's interest in whether students learned was:	34	47%	32%	18%	3%			4.4	3	4
Amount you learned in the course was:	34	47%	35%	15%	3%			4.4	5	5
Relevance and usefulness of course content were:	34	59%	29%	12%				4.7	6	6
Evaluative and grading techniques (tests, papers, projects, etc.) were:	34	41%	32%	15%	12%			4.2	3	5
Reasonableness of assigned work was:	34	44%	41%	12%	3%			4.4	4	5
Clarity of student responsibilities and requirements was:	34	47%	35%	15%	3%			4.4	4	5

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STANDARD OPEN-ENDED QUESTIONS

Was this class intellectually stimulating? Did it stretch your thinking? Why or why not?

1. This class was intellectually stimulating as it furthered my knowledge of data structures and C++ as a programming language. This class also stretched my thinking as we covered some topics outside of data structures like design patterns that forced me to think differently than how I normally think about objects and their design.
2. The final project was somewhat more difficult compared to the other projects but it was helpful for understanding project planning.
3. CSS 343 is a very hard class but it is very relevant to the software engineering field. I learnt topics that are directly applicable in job interviews and also in my future career.
4. There were many topics in the course that were confusing to start with. Some took many hours of outside study to be at a level that I felt comfortable with.
5. Yes, I think so. I feel like I have improved a lot in my programming abilities!
6. Yes it was very intellectually stimulating, the weekly projects provided were very useful at stretching my thinking
7. Yes, working with data structures I had not yet encountered was challenging to visualize and required extra studying to fully comprehend. The Related assignments help with my understanding.
8. Yes, I really liked the projects we worked. They were really cool.
9. This class introduced a lot of complex programming topics and had us use the things that we learned in a variety of situations. I would say that this class was very intellectually stimulating.
10. The projects really helped solidify my understanding, and the LeetCode problems kept me interested in the content (and forced me to think).
11. The class was really interesting with multiple in depth explanations on different data structures such as trees, bstrees, heaps, etc. and programming techniques such as recursion, polymorphism, and git.
12. -
13. Yes it definitely stretched my thinking, this course was very difficult and taught me many new concepts.
14. yes! We did lots of in class exercises that are similar to the kinds of programming questions you would get during interviews. The assignments were also quite difficult, though ample time was given to do them.
15. yes, very abstract topics hard to understand, introduced head first into lots of problem solving, lots of topics feels slightly farfetched.
16. Yes, this course was very intellectually stimulating. I felt challenged each class session with the LeetCode questions and how they were even sometimes incorporated into our lectures. I felt that this approach to teaching computer science was very unique and obviously serves a very practical purpose of preparing for actual job interviews.
17. Yes. The class helped me develop stronger algorithmic thinking and problem-solving skills. It pushed me to think more logically about how to approach different problems.
18. This class was definitely intellectually stimulating. The LeetCode problems in class made us put together all our knowledge into approaching a problem, such as what data type works best, how to handle and break up the data, what to do with the data, what patterns there are, how to process it, what to return, things of that nature. While this is the natural problem-solving process, for me, because the solutions or problem-solving approach/process a particular problem was NOT intuitive to me, it took me much longer on average to solve a problem. I often spent time outside of class getting to the same page as the rest of the class, which made me approach these problems differently. In this sense, it did stretch my thinking.
19. YES
20. Yes, thinking abstractly about data structures, algorithms, patterns, and polymorphism was very stimulating.
21. Yes, you have to learn how to implement multiple data structures and design patterns
23. Yes, this course taught me a lot about different data structures and design patterns. It expanded on my pre-existing knowledge and has definitely made me a better coder/engineer.
24. Yes, the class was intellectually stimulating as the professor had us do problems that were unfamiliar to us and stretched our thinking

What aspects of this class contributed most to your learning?

1. The LeetCode practice problems helped me grow my problem-solving skills and were very fun to do. I also found the projects to be very helpful in growing my skills as I could utilize what I had learned in the course. I also found the practice exams to be very helpful for practicing the topics we had covered in the class.
2. The projects contributed the most to learning.
3. I liked the slides, the leetcode practice, and the group work
4. The projects and the in-class LeetCode exercises helped most with learning new topics.
5. The lectures and assignments.

6. The weekly projects
7. I was very attentive to the lectures and feel that the way the information was provided was better than other professors I have had at UWB. On top of that, the short in-class assignments ensured we could grasp some of the basics of a concept, setting me up for success on the large assignments.
8. Professor Pisan has the best whiteboarding explanations. The slides were a little confusing but if you had any questions he would always stop and explain them well. Using a whiteboard to walk through examples, thought process and concepts.
9. I really liked the lectures, and I think the assignments are a good application of the material we learn in class.
10. The in-class examples, LeetCode problems, and Projects.
11. The professors lectures helped a lot with understanding the topics but was paired with self studying as well.
12. -
13. Lectures, Panopoto videos.
14. probably the assignments and reviewing the slides.
15. good lecture slides, instructor drawings and visualizations of abstract concepts.
16. I think that the way leetcode problems were used as examples for concepts we were learning, as well as the lectures in general were very enriching.
17. The LeetCode problem-solving practice contributed the most to my learning. Solving those problems helped me apply concepts and improve my coding and analytical skills.
18. The whiteboard explanations contributed the most. Where a topic or concept was vague/ambiguous, the whiteboard explanations illustrated and made clear what was actually going on and how we, the students, can do it. Where the textbook was dense and the slides lacking in crucial detail, the in-class "follow-alongs" were very helpful.
19. YES
20. The huffman, autocomplete, and movies project pushed my learning the furthest by far. Especially the movies project. The leetcodes that we did were also good.
21. The projects
22. The leetcode problems let us learn in a hands-on fashion
23. The lectures, assignments, in-class exercises, and LeetCode problems.
24. In class discussions were very helpful in furthering my reading in the class. I appreciate the use of code in order to further my knowledge on data structures and algorithms.

What aspects of this class detracted from your learning?

1. I think that design patterns were a little confusing and could use some more explanation or examples to help us understand.
2. Exams detracted from learning somewhat.
3. I did not like the professor's explanations, they were hard to understand and additional questions weren't clarified well.
4. Some lectures were a little bit fast paced. I think taking certain topics a little bit slower, if time allows, would be beneficial.
5. Nothing I guess?
6. The textbook felt redundant to the slides, i learned the concepts better from the lectures
7. I think the hardest part was no fault of the professor, but when all of the classes ramp up to the midterm, it can be very hectic trying to complete one of this classes hardest assignments during that time.
8. The slides were a little confusing on their own. But if you were in lecture, Professor Pisan's explanations were excellent and made the concepts very clear.
9. I felt like the readings werent very helpful
10. Nothing in particular. If anything, reading chapters were often quite long so I didn't read them as deeply as I should have. But the class content gave me a good understanding of the topics.
11. Some of the projects were unnecessarily complex detracting from the learning goal meaning a large portion of time would be allocated to working on the projects.
12. -
13. I think it was just the amount of topics we were tested on for the first exam because there was so much to study and it was hard to be properly prepared for all kinds of questions we would get.
14. I think sometimes his explanations assume that you know too much, like you have already done the solution before, though that could just be a me problem.
15. very high expectations from students overall, excessive amounts of leetcode problems, very easy to feel like youre falling behind if not up to pace during leetcode exercises, more valued in completion than understanding. homework directions are lacking, lots of confusion and misleading instructions. structured very differently from other average computer science professors, leading to pacing and depth issues. fast exam grading correlated to near zero partial credits given, slightly frustrating.
16. Nothing to note.
17. None. I did not feel that any aspect of the class significantly detracted from my learning.
18. Near the end of this class, when we were covering Finite State Machines, Turing Machines, and Grammar, the lack of explicit "follow-alongs" made it very unclear how to understand or solve these problems. For example, when we were told to make a Turing Machine, "Write the TM for adding 1 to a binary number," we were sort left on our own. Whereas with "Divisible by 5," we went over how adding 0 doubles and adding 1 doubles AND adds 1 to our remainder, and with the remainders as our states, we were able to build a FSM. That sort of "thinking out loud" and clear explanations were absent throughout most of these topics, which made it very unclear to grasp. The "Divisible by 5" is an exception.

- 19. YES
- 20. None
- 21. The readings
- 23. Nothing detracted from my learning.
- 24. N/A

What suggestions do you have for improving the class?

- 3. I suggest decreasing the time spent on leetcode solving and providing more time on explaining the concepts as they are the core of the class
- 4. Take certain topics, like grammars, a little bit slower if there is time to do so
- 5. I wish the assignments were a bit more interesting. The Movies project was really fun, more assignments like that would have been great. I also thought the LeetCode project was really fun. The graphs project was only cool because the algorithms themselves are cool, otherwise was a little dull. Not much problem solving or design thinking, I just read the textbook and implemented everything from there.
- 6. None, amazing job at explaining complex topics
- 7. With that one assignment that was due during the midterms week, I felt it was the most rushed and I learned the least. If in the future, the graph assignment can be staggered a bit better, that might help. But I know there is limited time in a quarter and there is a logical progression in which to learn this course material.
- 8. Perhaps the slides could be better. It seems like there is a lot of info jam-packed into the slides. And it can be slightly overwhelming. One time I missed lecture in person, and I felt it was really hard to understand the slides on their own, so I had to put in a lot of effort to understand the concepts covered in that lecture. Perhaps we could also spend more time focused on the balanced trees like AVL, 2-3 trees, and red-black trees. It seemed like we went through those 3 concepts very quickly.
- 9. My only problem that I had with the class was setting up and using docker in vscode. It took me well into the course before I was able to get it fully working.
- 10. Keep it up!
- 11. Don't make the projects too complex unless it adds to the learning.
- 12. -
- 13. I think having more than only one day of late time would be helpful, like even if we were allowed to use a few hours at a time and an overall of 24 hours would be helpful. Chances for extra credit as the exam is such a large part of the grade, if you do bad in that it's really hard to come back from.
- 14. I think maybe adding more smaller assignments would help.
- 15. lower the expectations in this course, if students want to go beyond just provide resources. very unjust amounts of knowledge required for non-computer science majors/students. not very encouraging being told to drop the class immediately after an exam. depending on prerequisite instructors, this course has drastic differences in pacing and expectations, very difficult to keep up.
- 16. Perhaps putting a little more effort into exam preparation. There was surprisingly little effort or thought put into the class sessions that were dedicated to this, especially considering how difficult the exams are/how harshly they are graded.
- 17. None. I think the class was well structured and helpful as it is.
- 18. I would suggest the professor tackle Turing Machines, Finite State Machines, and Grammars with more simplicity and clarity going forward, at least to transition students. Suddenly going into this topic was jarring, and the terminology or concepts were not easy (at least for me) to pick up. I also suggest being less exam-heavy on the grading. A student who did well in every aspect of this class EXCEPT the exams could come out with a low-score, when the exam environment could have been stressful and the student not at their best. A good alternative would be to have quizzes, where a "mini-exam" could cover similar problems and be more digestible because it's a few topics at a time, rather than half the course for exam 1 and the other half of the course for exam 2.
- 19. YES
- 20. None
- 21. I think the current amount of classwork is sufficient but I wouldn't mind more practice time in class
- 23. Sometimes it feels like we are moving through topics too fast; other than that, everything is good.
- 24. N/A

IASystem Course Summary Reports summarize student ratings of a particular course or combination of courses. They provide a rich perspective on student views by reporting responses in three ways: as frequency distributions, average ratings, and either comparative or adjusted ratings. Remember in interpreting results that it is important to keep in mind the number of students who evaluated the course relative to the total course enrollment as shown on the upper right-hand corner of the report.

Frequency distributions. The percentage of students who selected each response choice is displayed for each item. Percentages are based on the number of students who answered the respective item rather than the number of students who evaluated the course because individual item response is optional.

Median ratings. IASystem reports average ratings in the form of item medians. Although means are a more familiar type of average than medians, they are less accurate in summarizing student ratings. This is because ratings distributions tend to be strongly skewed. That is, most of the ratings are at the high end of the scale and trail off to the low end.

The median indicates the point on the rating scale at which half of the students selected higher ratings, and half selected lower. Medians are computed to one decimal place by interpolation.¹ In general, higher medians reflect more favorable ratings. To interpret median ratings, compare the value of each median to the respective response scale: *Very Poor, Poor, Fair, Good, Very Good, Excellent (0-5)*; *Never/None/Much Lower, About Half/Average, Always/Great/Much Higher (1-7)*; *Slight, Moderate, Considerable, Extensive (1-4)*.

Comparative ratings. IASystem provides a normative comparison for each item by reporting the decile rank of the item median. Decile ranks compare the median rating of a particular item to ratings of the same item over the previous two academic years in all classes at the institution and within the college, school, or division. Decile ranks are shown only for items with sufficient normative data.

Decile ranks range from 0 (lowest) to 9 (highest). For all items, higher medians yield higher decile ranks. The 0 decile rank indicates an item median in the lowest 10% of all scores. A decile rank of 1 indicates a median above the bottom 10% and below the top 80%. A decile rank of 9 indicates a median in the top 10% of all scores. Because average ratings tend to be high, a rating of "good" or "average" may have a low decile rank.

Adjusted ratings. Research has shown that student ratings may be somewhat influenced by factors such as class size, expected grade, and reason for enrollment. To correct for this, IASystem reports **adjusted medians** for summative items (items #1-4 and their combined global rating) based on regression analyses of ratings over the previous two academic years in all classes at the respective institution. If large classes at the institution tend to be rated lower than small classes, for example, the adjusted medians for large classes will be slightly higher than their unadjusted medians.

When adjusted ratings are displayed for summative items, **relative rank** is displayed for the more specific (formative) items. Rankings serve as a guide in directing instructional improvement efforts. The top ranked items (1, 2, 3, etc.) represent areas that are going well from a student perspective; whereas the bottom ranked items (18, 17, 16, etc.) represent areas in which the instructor may want to make changes. Relative ranks are computed by first standardizing each item (subtracting the overall institutional average from the item rating for the particular course, then dividing by the standard deviation of the ratings across all courses) and then ranking those standardized scores.

Challenge and Engagement Index (CEI). Several IASystem items ask students how academically challenging they found the course to be. IASystem calculates the average of these items and reports them as a single index. *The Challenge and Engagement Index (CEI)* correlates only modestly with the global rating (median of items 1-4).

Optional Items. Student responses to instructor-supplied items are summarized at the end of the evaluation report. Median responses should be interpreted in light of the specific item text and response scale used (response values 1-6 on paper evaluation forms).

¹ For the specific method, see, for example, Guilford, J.P. (1965). *Fundamental statistics in psychology and education*. New York: McGraw-Hill Book Company, pp. 49-53.