IASystem
The Course Evaluation Standard

COURSE SUMMARY REPORT
Numeric Responses

University of Washington, Seattle
College of Arts and Sciences
Applied Mathematics
Term: Autumn 2017

AMATH 422 A, Joint with AMATH 522 A
Computational Modeling Of Biological Systems
Course type: Face-to-Face

Evaluation Delivery: Online
Evaluation Form: A
Responses: 14/24 (58% high)

Taught by: Kameron Harris
Instructor Evaluated: Kameron Harris-Predoc TA

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:

Combined Median	Adjusted Combined Median
4.3	4.2

(0=lowest; 5=highest)

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: 5.1
(1=lowest; 7=highest)

SUMMATIVE ITEMS

	N	Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)	Very Poor (0)	Median	Adjusted Median
The course as a whole was:	14	36%	43%	21%				4.2	4.1
The course content was:	14	43%	29%	21%	7%			4.2	4.2
The instructor's contribution to the course was:	14	57%	29%	14%				4.6	4.6
The instructor's effectiveness in teaching the subject matter was:	14	36%	36%	29%				4.1	4.1

STUDENT ENGAGEMENT

Relative to other college courses you have taken:	N	Much Higher (7)	(6)	(5)	Average (4)	(3)	(2)	Much Lower (1)	Median
Do you expect your grade in this course to be:	14	14%	14%	36%	36%				4.9
The intellectual challenge presented was:	14	29%	43%	21%	7%				6.0
The amount of effort you put into this course was:	14	29%	21%	14%	29%	7%			5.5
The amount of effort to succeed in this course was:	14	21%	29%	29%	14%	7%			5.5
Your involvement in course (doing assignments, attending classes, etc.) was:	14	29%	14%	36%	14%	7%			5.3

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: 8.4 Hours per credit: 2.8 (N=14)

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
			21%	64%	7%		7%				

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

Class median: 6.3 Hours per credit: 2.1 (N=14)

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
	7%	29%	36%	14%	7%		7%				

What grade do you expect in this course?

Class median: 3.6 (N=13)

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)	F (0.0)	Pass	Credit	No Credit
23%	38%	8%	23%	8%										

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

(N=14)

In your major	A core/distribution requirement	An elective	In your minor	A program requirement	Other
7%		21%	71%		

STANDARD FORMATIVE ITEMS

	N	Excellent (5)	Very Good (4)	Good (3)	Fair (2)	Poor (1)	Very Poor (0)	Median	Relative Rank
Course organization was:	14	14%	50%	29%	7%			3.8	16
Clarity of instructor's voice was:	14	57%	36%	7%				4.6	6
Explanations by instructor were:	14	29%	43%	29%				4.0	14
Instructor's ability to present alternative explanations when needed was:	14	29%	43%	21%	7%			4.0	15
Instructor's use of examples and illustrations was:	14	50%	29%	21%				4.5	5
Quality of questions or problems raised by the instructor was:	14	29%	36%	36%				3.9	17
Student confidence in instructor's knowledge was:	14	57%	36%	7%				4.6	8
Instructor's enthusiasm was:	14	71%	21%	7%				4.8	3
Encouragement given students to express themselves was:	13	69%	23%	8%				4.8	1
Answers to student questions were:	14	29%	64%	7%				4.2	13
Availability of extra help when needed was:	13	54%	31%	15%				4.6	4
Use of class time was:	14	21%	64%	14%				4.1	11
Instructor's interest in whether students learned was:	14	64%	29%	7%				4.7	2
Amount you learned in the course was:	14	43%	36%	14%	7%			4.3	7
Relevance and usefulness of course content were:	14	36%	50%	7%	7%			4.2	10
Evaluative and grading techniques (tests, papers, projects, etc.) were:	14	21%	43%	36%				3.8	18
Reasonableness of assigned work was:	14	36%	43%	21%				4.2	12
Clarity of student responsibilities and requirements was:	14	43%	29%	21%	7%			4.2	9

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STANDARD OPEN-ENDED QUESTIONS

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

1. Kameron, sorry, Dr. Harris did an astounding job presenting a range of stimulating concepts and exciting applications. The insights were always clear and the mathematical tools were masterfully explained.

2. I liked to implement theories in codes.

3. This course was much more challenging given that I had very little background in the subject matter covered in class in relation to my classmates. In spite of the difficulties throughout the quarter, I did learn a lot and enjoyed the process of it as well, motivating me to take more related courses next quarter so that I can come back to the material of this course in the future with a better foundation.

4. The entire concept of representing biology mathematically is intriguing to me, so regardless of how effective the professor is the subject will be intellectually stimulating to me. Kameron however, did stretch my thinking by providing me with methods to analyse a model and apply them to real world settings.

5. Yes. The material presented in this class was extremely interesting from both biological and applied mathematical approaches.

6. Yes! As I was not familiar with linear algebra and had very minimal programming experience in matlab, it provided quite a bit of challenge to complete the assignments. However, I did gain more experience in matlab programming which is a plus

7. Yes! The different ways of modelling systems was very interesting, and I learned a lot about Matlab.

What aspects of this class contributed most to your learning?

1. The lectures were superb and the homework sets were carefully crafted to enhance learning. On top of that, there was dedicated mentoring and advising for the class project.

2. coding

3. Small class size and instructor's availability; it was easier to get to know my classmates than in other courses I have taken, which made the course feel more like an active learning experience rather than passive (this tended to be the case with most of my other courses, which were held in large lecture halls). Also, Kameron's availability during office hours (and sometimes outside of the regularly scheduled times) was very helpful, proven from the fact that I went in for office hours more times than in any other courses I have taken here.

4. Interactive matlab sections were very helpful in replicating the behaviours or mathematics described in the book. As I progressed through the course, I grew more and more comfortable with my textbook - something that has rarely occurred to me during my time at UW. We covered a great degree of material but I felt like it was well paced.

5. The homework sets did a great job of letting us apply the lessons we got during lectures.

6. Lectures (learning the material) and office hours (implementing what we learned into code!)

7. I think probably lecture examples, like when we all coded something up

9. Model explanations were very helpful

What aspects of this class detracted from your learning?

1. None.

2. some theories without proof. I couldn't feel like learning something when I use thoeries without proof...

3. The only prerequisite was MATH307, and the description said that no prior programming experience was assumed. Neither reflected the actual course experience which made me sad because I felt that I could have learned so much more from the class had I been more prepared.

4. Some portions of class weren't well scheduled. The last four weeks of class have been hectic as we were introduced to our projects and needed to present on the paper a week later - which made studying a more complicated model less appealing. My availability often didn't overlap with Kameron's, which could be resolved by teaching the course at an earlier hour.

5. N/A

6. The class was later in the day, so it was hard for me, personally, to retain information that was given to me. The room also made it hard to concentrate as well.

7. Sometimes lectures seemed a bit disorganized.

What suggestions do you have for improving the class?

1. I would have liked getting familiar with open source scientific computing tools such as Python and NumPy or Julia. That may just be my personal bias.

2. maybe more time for project (case sutdy, final presentation, paper)

3. Change course prerequisites (Minor concern, but) having some sort of way to check grades (preferably canvas, since most other courses use it and it's nice to have the gradebook and files all in one place)

4. For lectures, perhaps have them earlier in the day so questions can be asked thereafter. I would have appreciated forming groups earlier in the quarter to incentivise us to work together on the assignments and start to gel earlier as a group when it came time to select a subject. I would have appreciated continued homework assignments similar to that of the first problem set, where a paper would be read and the student would be asked to do tasks relevant to reproducing figures, quantifying assumptions, real-world implications, etc. Having just the study on birds definitely didn't interest the neuroscientists, so they probably got less out of it that other majors. Thanks for the excellent course!

5. More precise reading assignments from the book; although whole chapters would be assigned when we covered a unit, only parts of those chapters would be relevant to lecture materials. AMATH 342, a class similar to this one in format and content, offered more office hours throughout the week than this course; the extra time was very helpful.

6. For the group project, if there is a possibility, I would make a graduate student join a group of undergraduate students as it was hard being in a member of undergraduate students that had minimal knowledge of the papers we were recreating based on what we learned in class. I would also post the class notes onto the class website as another reference for students to use. Emphasizing the why and where you would use each model presented in class would help put it into context in the real world, because that was the missing connection for me and the class. I would have liked the real world applications of these models I learned and what can be done after the model had been implemented.

7. Probably posting grades somewhere (Canvas? Catalyst?) and having clearer grade distribution/understanding of how you're doing in the class.

8. Better integrate material from the textbook

9. Explaining big picture concepts before going into specific model examples could be helpful

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.