

Nomination Packet for the F. J. Taylor Award (2024)

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A. List of undergraduate courses taught including 9th day class enrollments and retention numbers.

Since the fall of 2015, I have taught 3387 (not necessarily distinct) students, and my overall retention rate is 82.73%. My average rating in all courses is 3.82 and my average number of courses per quarter is 4. Teaching students is what truly brings me joy. I find teaching is quite energizing rather than draining. The past year and five months has been a switch toward chair duties which makes teaching seem harder than it used to be, but while I am happy to serve my program by serving as program chair, my first love is still being in the classroom connecting with students.

Quarter	Course	Enrolled	Retained	% Retained	Evaluation Score
F15	Math 240	27	27	100.00%	4
F15	Math 240	45	26	57.78%	3.5
F15	Math 243	54	48	88.89%	3.8
F15	Math 311	50	42	84.00%	3.7
W16	Math 240	50	35	70.00%	3.9
W16	Math 240	47	41	87.23%	3.9
W16	Math 244	39	33	84.62%	3.8
W16	Math 244	26	25	96.15%	4
W16	Math 482	17	15	88.24%	3.8
S16	Math 242	46	44	95.65%	3.7
S16	Math 245	43	37	86.05%	4
S16	Math 245	37	34	91.89%	3.8
S16	Math 307	28	21	75.00%	3.8
S16	Math 445	11	9	81.82%	3.8
F16	Math 243	40	34	85.00%	3.9
F16	Math 308	32	30	93.75%	3.5
F16	Math 311	31	28	90.32%	3.9
F16	Math 311	31	24	77.42%	3.6
W17	Math 243	42	41	97.62%	3.8
W17	Math 244	42	37	88.10%	3.9
W17	Math 313	31	28	90.32%	3.7
W17	Math 482	17	15	88.24%	4
S17	Math 245	44	40	90.91%	3.9
S17	Math 307	28	21	75.00%	3.8
S17	Math 313	28	25	89.29%	3.9
S17	Math 483	2	2	100.00%	4.0
S17	Math 583	4	4	100.00%	4
F17	Math 243	41	35	85.37%	3.9
F17	Math 244	47	43	91.49%	3.9

F17	Math 311	29	21	72.41%	3.9
F17	Math 313	31	30	96.77%	4
F17	Math 490	1	1	100.00%	4.0
F17	Math 510	2	2	100.00%	4.0
W18	Math 242	41	31	75.61%	3.7
W18	Math 242	41	28	68.29%	3.8
W18	Math 244	40	30	75.00%	3.9
W18	Math 313	30	28	93.33%	3.8
S18	Math 245	36	36	100.00%	4.0
S18	Math 303	30	26	86.67%	3.9
S18	Math 307	27	16	59.26%	4
S18	Math 313	19	18	94.74%	4.0
S18	Stat 405	43	36	83.72%	3.9
F18	Math 243	43	29	67.44%	3.8
F18	Math 307	14	13	92.86%	4
F18	Math 311	26	17	65.38%	3.9
F18	Math 313	25	25	100.00%	3.7
F18	Math 394	5	5	100.00%	4.0
W19	Math 242	47	40	85.11%	3.7
W19	Math 244	42	31	73.81%	3.6
W19	Math 313	31	30	96.77%	3.4
W19	Math 482	25	18	72.00%	3.3
S19	Math 112	40	28	70.00%	3.4
S19	Math 245	40	33	82.50%	3.9
S19	Math 303	15	13	86.67%	4
S19	Math 313	24	20	83.33%	4
S19	Math 483	5	5	100.00%	4
F19	Math 240	40	24	60.00%	3.8
F19	Math 240	40	34	85.00%	3.8
F19	Math 244	48	41	85.42%	3.7
F19	Math 313	30	28	93.33%	3.7
F19	Math 394	12	12	100.00%	3.5
W20	Math 112	41	30	73.17%	3
W20	Math 242	43	40	93.02%	3.8
W20	Math 244	39	31	79.49%	3.7
W20	Math 313	28	26	92.86%	3.8
S20	Math 245	39	31	79.49%	3.9
S20	Math 303	12	12	100.00%	3.3
S20	Math 313	30	26	86.67%	3.8
S20	Stat 405	34	32	94.12%	3.9
S20	Stat 405	29	20	68.97%	3.6
F20	Math 240	31	30	96.77%	3.8
F20	Math 242	34	20	58.82%	3.8
F20	Math 244	35	27	77.14%	3.7
F20	Math 313	29	26	89.66%	3.8

F20	Math 394	6	6	100.00%	3.7
W21	Math 242	41	34	82.93%	3.9
W21	Math 242	40	25	62.50%	4
W21	Math 244	29	26	89.66%	3.9
W21	Math 313	32	29	90.63%	4
S21	CSC 310	32	31	96.88%	3.8
S21	Math 245	35	31	88.57%	3.9
S21	Math 303	12	11	91.67%	4
S21	Math 313	24	22	91.67%	3.9
F21	CSC 475	24	15	62.50%	4 (N=1)
F21	Math 244	39	35	89.74%	3.8
F21	Math 313	28	27	96.43%	3.9
F21	Math 394	8	8	100.00%	4
F21	Stat 405	41	31	75.61%	3.8
W22	Math 242	38	25	65.79%	4
W22	Math 242	38	28	73.68%	3.7
W22	Math 244	32	28	87.50%	4
W22	Math 313	25	25	100.00%	4
S22	CSC 310	26	26	100.00%	3.9
S22	Math 245	25	18	72.00%	3.9
S22	Math 303	8	8	100.00%	4
F22	Math 240	32	25	78.13%	3.8
F22	Math 244	35	26	74.29%	4
F22	Math 307	13	4	30.77%	3.5 (N=2)
F22	Math 311	24	16	66.67%	4
F22	Math 394	8	7	87.50%	4 (N=2)
W23	Math 244	39	33	84.62%	3.7
W23	Math 313	26	24	92.31%	3.9
W23	Math 482	15	14	93.33%	4
S23	CSC 310	28	28	100.00%	3.9
S23	Math 245	26	22	84.62%	3.9
S23	Math 303	11	11	100.00%	4 (N=4)
F23	Math 243	41	24	58.54%	3.8
F23	Math 307	8	5	62.50%	4 (N=2)
F23	Math 394	14	13	92.86%	3.4
W24	Math 242	35	19	54.29%	TBD
W24	Math 244	80	64	80.00%	TBD
W24	Stat 405	43	34	79.07%	TBD

B. Personal Statement on my beliefs on the importance of undergraduate teaching within the overall mission of Louisiana Tech.

The mission of Louisiana Tech University states “As a selective-admissions, comprehensive public university, Louisiana Tech is committed to quality in teaching, research, creative activity and scholarship, public service, and workforce/economic development.

Louisiana Tech maintains as its highest priority the education and development of its students in a challenging environment within a safe and supportive, diverse community of learners.”

Undergraduate education is the first step any institution can take toward achieving research, creative activity, and scholarship. If Louisiana Tech University truly wants to be successful in its mission, undergraduate education is quite possibly the most important investment that can be made. If there are no students able to do academic research or produce creative ideas, then the rest of the mission is moot. My personal belief as a teacher is that students learn well when they are connected to their instructors, their classmates, and the material. I try to foster an atmosphere that produces a comfortableness for every student to feel connected to all three. For me to understand how to help my students, I need to know who they are, what their background is, and where they want to go. Not many aspects of education are universal for all, but one thing I try to remind everyone, outside of the need for integrity, is the fact that to achieve anything significant, it takes an extreme amount of dedication and hard work. The only way to get anywhere worth going is to put in the work needed to get there.

That fact became real to one student of mine in a recent quarter. After the student took their first exam, the student was disappointed with their score. The student told me they had always done well in high school and had compared their score on the first exam to one of their classmates who had scored very well. I explained to that student that the comparison game is a slippery slope. The student doesn't know whether their classmate had already seen the material in high school or was repeating the course etc. There's no way to know the circumstances a priori and living a life of comparison will only lead to frustration rather than determination. I told my student that the only way to get to that level where they wanted to be is to persistently and consistently put in the repetitions just as if they were playing college sports. Well, this student of mine ended up making some of the best scores on the next few exams and the final. When I asked them what had changed, they said they had done countless book problems even jokingly saying every book problem.

The analogy of academics with sports is one I make frequently for students learning mathematics and science. I strongly believe STEM education is muscle training for the brain in the same way that weight training for the legs or torso muscles or aerobic exercise makes athletes better at what they do. Sometimes you just need to do the work to get the results you want. If you don't do the work then you won't achieve the performance you want or need on gameday, or in our case test day.

C. Important Innovations in Undergraduate Education

Course Creation: Math 303 Introduction to Vector and Tensor Calculus

In the spring of 2017 and the fall of 2017, I was tasked with creating a course that would allow UTeachTech students to satisfy some of the specific curriculum requirements for majoring in mathematics. The requirements were that students needed to see topics from calculus in three dimensions again, linear transformations, matrices, and others. However, I was told not to explicitly teach the same material that we cover in Calculus III and IV. This truly had to be a new course. After some investigation on my part, I discovered that tensor calculus covers all these topics. The biggest problem was that I had no idea what tensors were, or how to do any calculus with them.

I then began one of the most fun research projects I have done to date. I learned so much through this process. In addition to just learning the content, I learned quite a bit from

seeing what other schools had done to structure a course around this topic. I decided to incorporate some online quizzes in reference to conceptual videos I found. The students were also required to have some historical perspectives, helping me to decide to include a research paper on some of the founders of the subject. Students generally enjoy learning about the people who developed this field of mathematics. One goal students typically end up feuding over is finding the most interesting or outlandish fact about their particular mathematician or physicist. Students generally enjoy the course and do well overall.

Rethinking Calculus: A Thematic Approach

In the fall of 2022, the program of mathematics piloted a novel approach to preparing students for calculus. We have submitted a paper to ASEE which has been accepted for presentation this summer. The approach developed uses some topics in calculus to contextualize the need to review algebra and trigonometry. We tracked students into their subsequent calculus courses and compared their test scores to those who used the standard approach and found no significant difference. However, the new course was more enjoyable for the students and instructors alike. The course we had previously was one which most students and instructors complained about having far too much material and the course being too fast to truly comprehend and do well. We have been constantly evaluating the specific content of the course, and we make regular adjustments to pace, and pedagogy, but this shift in how to teach mathematics is challenging many of us to rethink the status quo.

D. Recent or relevant publications, papers, and/or presentations related to teaching

Boyet, C., Smith, C., Walters, J. "Rethinking Precalculus: A Thematic Approach" Proceedings of the American Society for Engineering Education, Portland, OR, (June 23 - 26)