THE SEAWAY CURRENT

Newsletter of the Seaway Section of the Mathematical Association of America

IN THIS ISSUE...

THE SEAWAY CURRENT

The Seaway Current is published at least twice per year by the Seaway Section of the Mathematical Association of America (MAA) for the benefit of its members. Its pages are open to all members of the MAA and, by invitation to others, for the exchange of information and opinion. Contributed announcements, articles, and editorials are welcome and should be sent to the editor.

Material may be submitted to the editor by e-mail. Opinions expressed in this newsletter are those of the editor or of individual contributors and do not necessarily represent the views of the MAA or of the Seaway Section.

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Important Announcements

After much deliberation, the Executive and Extended Executive Committees report:

- The In-Person SPRING 2021 Seaway Section meeting, originally planned to occur at St. Bonaventure University, has been cancelled.
- The In-Person FALL 2021 Seaway Section meeting has also been cancelled.
- The election of the Seaway Section Representative to the MAA Congress will be conducted electronically, by the MAA. Expect electronic ballots this spring, and more information on the nominees is available in this issue.
- There will be a virtual Spring 2021 Business Meeting and a virtual election for open positions on the Executive Committee. Please stay tuned for details about the dates and methods.

Thank you to our local organizers for lining up to host these cancelled in-person meetings. While it may be safe to resume in-person gatherings by fall, planning a Seaway Section meeting begins a year or more in advance and it is simply not feasible to plan an in-person fall meeting at this time. We hope to re-line up the meeting sites when it is safe for in-person meetings to resume.

This is your Section, become part of the program.

What events would you like to have? What events can YOU organize? The Seaway Section's Program Chair, Brad Emmons (bemmons@utica.edu), is gathering requests and volunteers to create a member-led program of free virtual events for Spring 2021. If you are organizing an event for your college or university, or want to host an event as part of your class, or want to host a workshop, get in touch with Brad. Now is the time to share resources.

Look for event announcements on the Seaway Section Facebook group (@MAASeaway), the liaison list, and the webpage (https://maaseaway.org/).

The next page of the Seaway Current is intentionally left blank,
as a written "moment of silence" to mark the passing
of so many lives, locally and worldwide, due to the coronavirus pandemic.

Each of us has a part to play in ending the pandemic.
Stay home, if you can, and wear a mask if you go out.

Be safe. Take care.

SPRING 2021 EVENT HORIZON

- Cheryl Miller (SUNY Potsdam), Section Chair, is hosting a virtual Business Meeting, open to all interested parties. For information on what sort of discussion usually occurs at the business meeting, check out the minutes from one in a previous spring or fall edition of the *Current*.
- Gary Towsley (SUNY Geneseo, emeritus) is organizing a discussion on the History of Math. This discussion will be similar to the Fall 2020 discussion on Real Analysis.
- Blair Madore and Cheryl Miller (both from SUNY Potsdam), along with the Seaway Section Student Program Committee, are planning to host a virtual puzzle contest for students and faculty. Puzzles could include crosswords, search a words, logic puzzles, sudoku, hanjie (nonagram), and more.
- Blair Madore (SUNY Potsdam) invites the section to stop by his classes for student presentations, later in spring.
- Keiko Dow (D'Youville University) and the Seaway Section Student Program Committee are working on a Careers in Mathematics panel for students, similar to the panel on graduate school held last fall.
- The Seaway Section is co-sponsoring a workshop with the Greater Upstate New York Inquiry-Based Learning (IBL) Consortium on IBL and social justice as the annual Randolph Lecture series. The workshop is tentatively scheduled in late March / early April and will be facilitated by Victor Piercey from Ferris State University.
- Elizabeth Wilcox (SUNY Oswego) is hosting a conversation hour of some sort and with some regularity.

What vague invitations to fun and games you have here!

Everything is in development, so all that can be said is:

- If you have ideas for events that should be added to that list, get in touch with Brad Emmons (bemmons@utica.edu). Your name, listed as organizer, would be greatly appreciated.
- Events will be advertised on the Facebook group, by email through liaisons and Seaway NExT email list, and on the website. We'll do our best to get in touch with you, but you might want to volunteer to be your department's liaison so that you get the news first. Send a note to Jeff Johannes (johannes@geneseo.edu).
- In general, the events will be free and open to participation by individuals from across the section and beyond.
- Registration, when required, helps track participation levels as part of the section's reports to the national organization. It also aids in event coordination.
- Some events may be recorded, either with video, audio, or both, and participants will be notified at the start of the event if and how recording will occur and how the recording will be shared afterwards.

Perhaps, readers, you don't think that's enough information to set your schedule on. You may be right.

A taste of what we have in store for you . . .

Here is an example of the kind of puzzle you might encounter in the puzzle contest. Have a think, we might have a date or two for you when you're done.

Sudoku with a math twist
Solve the sudoku puzzle at left. Instead of using the digits from 1-9, the puzzle uses 9 different letters. Finally, using those 9 letters, reorder them to spell a 9-letter word on a math theme.

Seaway Section Representative to the MAA Congress

The Section Section has nominated JANE CUSHMAN (Buffalo State College) and JEFF JOHANNES (SUNY Geneseo) for the Seaway Section Representative to the MAA Congress. Now, it's up to you to **vote**! Voting members in the Seaway Section will receive an electronic ballot, similar to the one received last spring for the section's electronic election of section officers. Sometime this spring, your ballot will be sent to the email address linked to your MAA membership account so check that your email (and membership!) is up-to-date.

The MAA conducts the election for the position of Seaway Section Representative to the MAA Congress. This position is *not* an officer of the section, though a member of the section executive committee, and the individual in this position assumes the following responsibilities, according to the MAA Congress bylaws:

1. make every effort to come to all MAA Congress meetings,
2. represent the needs and interests of their constituencies,
3. communicate decisions of the MAA Board to their constituencies, and
4. stay abreast of issues facing the MAA and to serve as ambassadors for mathematics and the MAA.

The elected Section Representative will serve a 3-year term on the MAA Congress, beginning July 1, 2021. Additional description of the position and its responsibilities in the MAA Congress can be found in the MAA bylaws).

The Candidates

JANE CUSHMAN:

Professor Jane Cushman has been active in the MAA Seaway Section since she moved to Buffalo (Buffalo State College) in 2006. She was a Project NExT fellow in 2007 (Gold Dot). Since she was also a National Council of Teachers of Mathematics (NCTM) member (since 1986), the MAA asked her to be on the MAA-NCTM Joint Committee on Mutual Concerns.

The Spring 2014 Seaway Section meeting was hosted by Buffalo State College and chaired by Professor Cushman. The MAA Seaway Section Educational Policy Committee has been chaired by Professor Cushman for many years. She regularly attends the Extended Executive Board Meetings at the MAA Seaway Section Bi-Annual meetings.

JEFF JOHANNES:

The Seaway Section and the MAA are home to me. I treasure both of them. For the past 6 years, I have been proud to serve as your Member-at-Large, and watch as our leadership has changed, but always carried us forward with care and thoughtful consideration. For longer than that I have served as your liaison coordinator, and have also been serving on the program committee and largely been responsible for our keynote talks at meetings. Since starting in 2000, I have enjoyed attending each MathFest, and since moving here in 2001, I have been happy to attend all Seaway meetings except one at Elmira college (sad about missing that meeting and hoping to make up for it soon). I am safe in the Seaway Section and the MAA, and I always strive to create a welcoming atmosphere for all.

I am proud of our section, and have been happy to speak on our behalf at MathFests through my time. I look forward to representing you and telling our colleagues nationally of all the great things we do in our section. Thank you for all you do to make our section exceptional.

Ending Courses on a High Note

Written by Blair Madore, State University of New York at Potsdam

One of my favorite students of all times was in my first Calculus class ever at Potsdam in 1999. He has stayed in contact with me for the last 20 years and on multiple occasions has reminded me of the "brutal" final exam I gave in his linear algebra class. In hindsight, my exam was too hard and it clearly left this student with a bitter taste that has not left him to this day. That's clearly not what we want for our students, but what can we do about it? Even an easy exam can feel brutal for an underprepared student.

When I read the article "Final Exams or Epic Finales?" by Anthony Crider in the Chronicle of Higher Education[1], I knew I had something to try that might address this problem. Crider suggests that we keep the serious assessments in the course,

whether exams or essays or otherwise, but don't make them the final scheduled event of the course. Instead, plan a group challenge, an awards ceremony, or really any kind of event that has an academic base and serves as a fitting end to your course. Hopefully students will remember the uplifting epic finale instead of the "brutal" final exam for the next 20 years.

During the fall of 2020, I was teaching advanced calculus entirely online. I needed a final exam that would allow them the time to engage seriously in developing proofs and a take home was the only real option. I still wanted to do something during our final exam time period so I began plotting an epic finale, though I told them it was just an in class portion of the exam.

Ultimately I devised a three part epic finale. Part I was a group challenge to provide examples or explain why they are impossible. Part II was a crossword puzzle themed around the class, both the math and particulars of our course, that they solved together as a group. Part III was an oral assessment of their experience in the course. It was really a group reflection where we could provide feedback to each other on our joint experience - as opposed to written course evaluations that are mostly about the instructors and course materials.

Blair Madore

I found the whole experience fun, educational and deeply satisfying. From what the students said, they did too. I encourage all of you to read Crider's article and consider trying something similar. Our current teaching and learning circumstances seems to be a very appropriate time for this kind of experimentation.

I provide the actual materials below as an example. *[Editor's Note: Two of the three activities are on this page; the crossword is on pages 6-7.]* Since some of the crossword clues are very specific to our class it is not realistic for all people to be able to solve it. If you want the solution or advice on how to make a crossword, please contact me (madorebf@potsdam.edu).

References

1. Crider Anthony, "*Final Exams or Epic Finales*", Chronicle of Higher Education, July 27, 2015.

2. crosswordhobbyist.com

Activity 1 Examples (45 minutes)

For each of the following find an example or explain why one does not exist.

1. A function defined on $[0,1]$ so that $f(0) = 0$ and $f(1) = 1$ but the range of f is not equal to $[0,1]$.
2. A continuous function defined on $[0,1]$ so that $f(0) = 0$ and $f(1) = 1$ but the range of f is not equal to $[0,1]$.
3. A continuous increasing function defined on $[0,1]$ so that $f(0) = 0$ and $f(1) = 1$ but the range of f is not equal to $[0,1]$.
4. A sequence with exactly 4 subsequential limits.
5. A sequence with infinitely many subsequential limits.
6. A sequence with no subsequential limits in $\mathbb{R}$.
7. A bounded sequence with no subsequential limits in $\mathbb{R}$.
8. f is defined on $[-1,1]$ and $\lim_{x\to 0} f(x) = f(0)$ but f is not continuous on $[-1,1]$.
9. f is defined on $[-1,1]$ and $\lim_{x\to 0} f(x) = f(0)$ but f is not continuous at 0.
10. f and g are defined on $[0,1]$ and $f+g$ is continuous on $[0,1]$ but both f and g are not continuous on $[0,1]$.

## Activity III - SomeBody Reflection

(30 minutes)

1. Brain - What is something (significant) that you learned this semester?
2. Heart - Describe a feeling you experienced during the course. What did you take to heart?
3. Hand - Give a hand to (i.e. compliment) someone who did something particularly well during the course.
   Note from Author: *This is the only part I would change. I think you should ask them to compliment another student in the course. Some of them talked only about me and that is not what I intended.*
4. Lungs - Was this course a breathe of fresh air? If so, how?
5. Foot- Identify a step in a new direction for yourself after taking this course.

Missing the *Seaway Swag?*

It turns out that Seaway Swag is not stored in a location that can reasonably be accessed during the pandemic, contrary to the information in the last Current.

Sorry!

Activity 2 Crossword Puzzle (45 minutes)
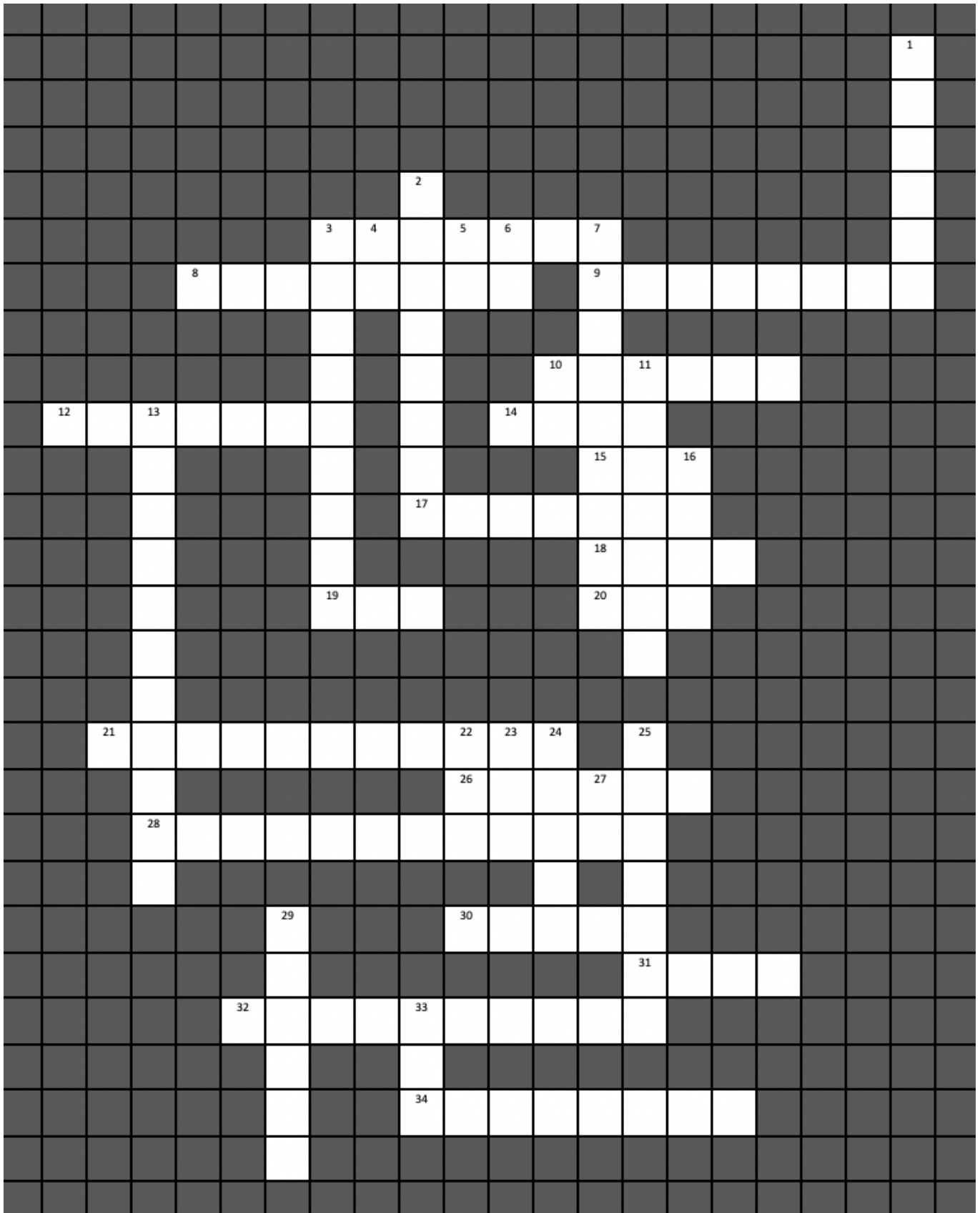
Clues provided on the next page.

Activity 2. Crossword Clues

ACROSS CLUES

3. $\exists M \in \mathbb{R} \, \forall n \in \mathbb{N} \, |x_n| < M$.
8. Least Upper Bound.
9. We say an increasing sequence that is not bounded above approaches this.
10. The good guys in Star Wars.
12. Our favorite greek letter.
14. The additive identity in $\mathbb{R}$.
15. Synonym for infimum (abbrev.)
17. Theorem named after a synonym for embrace.
18. The metric prefix for 10^{-9}.
19. First name of textbook author.
20. Abbreviation for an explosive substance.
21. How to respond to a classmate's greeting.
26. When this is equal to the $\limsup$ the sequence has a limit.
28. This axiom holds for the reals but not the rationals.
30. Fill in the blank in Clue 29 Down.
31. Surname of our textbook author.
32. Precisely the type of function where you find the limit by plugging in values.
34. We prove a lot of these in upper division math classes.

DOWN CLUES

1. French mathematician who first defined a convergent sequence.
2. The numbers you add to get the sum.
3. What to do when figuring out a limit proof.
4. Football Position (abbrev)
5. Greek letter ν
6. The referee of a fantasy role playing game (abbrev.).
7. A sequence that is bounded and does not converge.
11. How to greet a classmate.
13. Every bounded sequence has one of these that converges.
16. Not straight.
22. Bar beverage.
23. Oscillating function.
24. If you get Covid you may lose this sense.
25. When you have problems you need these.
27. Present tense of "to be".
29. The Extreme _____ Theorem is only valid on this type of interval.
33. If a continuous function passes from negative to positive it must pass through zero (abbrev).

Surviving Math Class & a Pandemic

Written by Andy Guity, journalist for Da Hood Journal &

sophomore journalism major at the State University of New York at Oswego

The year 2020 was one to forget. Several different factors played a part in what was a rough start to the decade, including police brutality, racism, and the presidential election to name a few.

But what truly defined the last three hundred sixty-five days was COVID-19, the disease caused by the novel virus SARS-CoV2 (also known as "the coronavirus"). This virus, which first appeared in China around late 2019, causes a disease we're all too familiar with at this juncture. This pandemic has caused millions of deaths across the world, and hundreds of thousands here at home in the U.S.

It's also a disease that's significantly altered the way we live. If adults thought social interaction amongst each other was an issue before, this virus ended that entirely. In order to curb the spread of COVID, we've been introduced to the concept of "social distancing", where people must remain (at least) six feet apart from one another.

As a result, large gatherings are almost slim-to-none, and you must wear a mask that covers your mouth & nose, whenever you step foot outside your home. Life is much different than it was just a year ago.

The education system is an entity that was hit hard due to the pandemic. Since March of 2020, students across the country have been forced into virtual learning. They've been receiving instruction from the comfort of their homes, rather than the classrooms we've grown accustomed to. It still hasn't been a walk in the park.

Specifically discussing college students, online learning is an experience with its pros & cons. Cons involving the communication disconnect that arises while professors attempt to teach over Zoom and the lack of enthusiasm from students to complete assignments. On the flip side, asynchronous courses offer flexibility for those with hectic schedules, and we no longer have to deal with the hassle of getting up & traveling to class three times a week. However, regardless of the advantages & disadvantages, online learning isn't for everyone.

Not to mention, certain subjects aren't meant to be taught virtually, like math. College-level mathematics consists of courses ranging from broad, like algebra & calculus, to specific, like cryptology. These courses were designed to be taught in-person, so students can bounce ideas off each other, think critically in an academic space, and seek assistance from professors when needed. Due to our circumstances, that hasn't been the case.

Speaking from experience, during the spring semester of my freshman year, when COVID reached its peak, I failed to process the information provided by my statistics professor in the fifteen-minute videos she recorded for us to watch.

To get a scope of COVID's impact in higher education, I conducted a handful of interviews with students across the east coast, to see what their experiences were like taking math courses in the midst of a pandemic. All eight interviews were recorded over Zoom, and each testimony varied slightly as we shared these conversations.

For Cody, a sophomore Math major at SUNY Oneonta, he expressed his preference for in-person learning. Especially after last semester, wherein his non-parametric statistics course was held once a week & each meeting was two & a half hours long, he was assigned a packet of problems weekly. To add insult to injury, his professor failed to record their Zoom calls, making it difficult to review class material if he couldn't retain the information during the meeting.

Photo by Edwin Hooper on Unsplash.

On the opposite side of the spectrum, for Rickey, a sophomore Business Administration major at SUNY Oswego, it didn't matter whether his statistics class was in-person or online. His professor taught in a manner where he managed to learn, regardless of the setting.

While conducting these interviews, students expressed relief that instructors remained available outside of class, whenever students had questions, after moving to online learning. That's something Cynthia, a junior Human Resources Management major at SUNY Oswego, shared during our chat. She highlighted how accessible her statistics professor was before & after class meetings.

Speaking of class, some students had more in-person classes than I would have thought. That was the case for Thacher, a junior Math major at Skidmore College in Saratoga Springs, NY, and MacGregor, a Junior Math & Economics major at St. John Fisher College in Rochester, NY. For Thacher, his numerical algorithms course met three days a week, due to his school's relatively low number of COVID cases. For MacGregor, his in-person class consisted of students & teachers assistants, as his professors were teaching on Zoom from home due to health concerns. He said it helped immensely interacting with his classmates face-to-face.

That was the consensus amongst the students I spoke with, how invaluable in-person instruction is. That was the case for Keith, a freshman Math major at SUNY Oswego, & Moise, a freshman Biology major at SUNY Oswego. They quickly realized the stark contrast of virtual learning. There isn't the same level of pressure to learn like before, even though their professors have been putting them in a position to succeed on homework assignments & exams.

And that can be frustrating for passionate students like Navya, a sophomore Applied Math major at SUNY Oswego. During her interview, she shared how math distracted her from the hardships of her childhood. With online learning, she's struggling to recapture that energy that helped her fall in love with the subject.

That goes to show how much COVID has affected us, students. We have yet to explore its impact on scholars majoring in communications, or business, or the arts, or other sciences. And what about our high schoolers & middle schoolers?

Nonetheless, it has been difficult to transition from face-to-face to remote learning for all parties involved. It's not easy replicating the enthusiasm needed in school when class is being held behind a computer screen more than half the time. Especially when people are dying from this infectious virus daily. Unfortunately, those are the cards we've been dealt. Now it's up to us to make the best of an unfavorable situation.

To conclude, this past year has been unlike any we've experienced before. That was put on display within the higher education system. Students enrolled in math courses gained the added flexibility that comes with online learning, but also faced the communication disconnect interacting with professors & classmates over Zoom. Despite the challenges our students faced, it appeared from the interviews we conducted that they all gave a concerted effort to do well in their courses. It embodied the resilience of our scholars attending school while in a pandemic. With that being said, let's hope that our world returns to normal, sooner rather than later.

Special thanks to Navya, Cody, MacGregor, Rickey, Moise, Cynthia, Keith, and Thacher for participating in this project!

SEAWAY APPRECIATION COLUMN:

Know a Seaway Section member who is retiring? Or who has won an award? Maybe they just said a few encouraging words at the right time? Or, they're the quiet person who is always in the background and never in the foreground?

Submit a short note to the Seaway Appreciation column! Send Elizabeth Wilcox (elizabeth.wilcox@oswego.edu) an email (Subject Line: Seaway Appreciation) with the person's name and a sentence or two (or a few more!) about their contributions.
And, hey there, Seaway Section Members: Thanks for reading. I appreciate you!

Summer 2021 REU Opportunity

The REU program at Hobart and William Smith Colleges will be running again in summer 2021. This summer there will be research opportunities in Algebra, Graph Theory, Neuron Networks and Mathematical Virology. Your students may find more information available at the site http://math.hws.edu/REU/. There's still time to apply: Applications are due February 12th!

Know a student who might be interested? Tell them to come to a virtual presentation by Jen Biermann, one of the faculty mentors in the REU, on Wednesday, Feb. 3 at 4 pm. It's free to come to the presentation, just register here (https://bit.ly/3oiMYN4) to get the meeting link.

The participants of the 2018 REU are shown at right, in front of Taughannock Falls in Ithaca, New York.

SECTION NOTES - WINTER 2021

This edition's Section Notes come to us from:

- St. Bonaventure University
- State University of New York at Geneseo
- State University of New York at Oswego
- State University of New York at Plattsburgh
- University of Buffalo

St. Bonaventure University

After serving St. Bonaventure University for 25 years in many roles, Sally Kwiatkowski retired in the spring of 2020. Sally has been the chief mathematics tutor in the Teaching & Learning Center, the mathematics director in the Higher Education Opportunity Program (HEOP), our developmental math specialist, and for the last 10 years or so an invaluable full-time member of the Mathematics Department. Sally is a truly wonderful colleague and friend whose caring approach makes her a favorite of students from across the University. We are delighted that she is continuing to contribute her talents to the Department as an adjunct.

The Mathematics Department is thrilled that Tim Mobley joined our faculty in August 2020. Moving to a new state and starting a new teaching gig is challenging under the best of circumstances, but that Tim did this in the midst of a pandemic and took on his classes with enthusiasm and good cheer is extraordinary. Welcome to the Bona's family, Tim!

(Submitted by Christine Uhl)

State University of New York at Geneseo

The Department welcomed Shandeepa Wickramasinghe in Fall 2020 as our newest full-time visiting assistant professor faculty member. Shandeepa has a Ph.D. in Applied Mathematics from Clarkson University.

Professor Cesar O. Aguilar was promoted to Associate Professor in 2020, he joined the mathematics department in Fall 2016 as Assistant Professor. Cesar has a Ph.D. in Applied Mathematics from Queen's University(Canada), 2010.

Professor Gary Towsley retired at the end of the 2019- 2020 academic year, after a career at SUNY Geneseo spanning about 46 years. Gary received his M.A. and Ph.D. from the University of Rochester. Gary was mentioned in the Princeton Review, named as one of the nation's Best 300 professors. He has served the Seaway Section as Governor, Chair, and Treasurer.

Professor Olympia Nicodemi was named the winner of the Charles Dunn Award (2020). Olympia retired at the end of the 2019- 2020 academic year, after a career at SUNY Geneseo spanning about 39 years. She received her Ph.D. from the University of Rochester. Olypmia was promoted to the rank of Distinguished Teaching Professor in 2009, received the Tepper-Haimo Award for Distinguished College and University Teaching from the MAA in 2004 and the Chancellor's Award for Excellence in Teaching in 1989.

(Submitted by Ahmad Almomani)

State University of New York at Oswego

The Mathematics Department at SUNY Oswego is sad to announce the retirements of professors Christopher Baltus (summer 2019) and Scott Preston (winter 2019) since the last submission of a Section Note. Both served as chairs of the department, and both are continuing to work on mathematics after retirement; Chris recently published a book on collineations and projective geometry, and Scott is studying machine learning and bayesian statistics. Magdalena Mosbo, long a member of the Seaway Section and the department's section liaison, was elected as the next department chair and Sarah Hanusch now serves as our Seaway Section liaison.

(Submitted by Elizabeth Wilcox)

State University of New York at Plattsburgh

Richard Spindler is leaving our department and moving back to Wisconsin at the end of the school year.

(Submitted by Sam Northshield)

University of Buffalo

The University at Buffalo mathematics department bid a fond farewell to Jae-hun Jung, who has taken up a new position at Pohang Institute of Science and Technology in Pohang, Korea. The department's new MAA liaison is Dane Taylor.
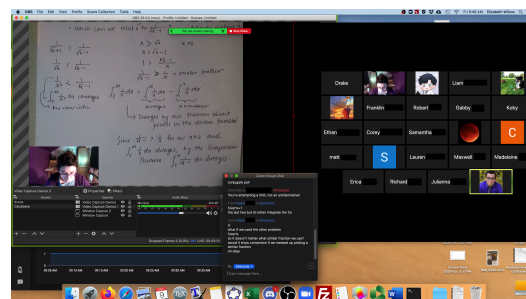
(Submitted by Dane Taylor)

FOUND OBJECTS

	Mathematical Space	Social Space
Students Need	deep engagement in rich mathematics	opportunities to collaborate
Instructors Must	inquire into student thinking	foster an equitable environment

The four pillars of IBL. TJ Houghton.

Image credit: Nina White, University of Michigan.

Class photo in the coronavirus pandemic.

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