

University of Maine

Upward Bound Math Science

"In order to succeed, we must first believe that we can."

- Nikos Kazantzakis



Director's Message

Chicken Soup (or Vegetable Soup) for the First Quarter Soul

As the end of the first quarter closes, it is time to recognize that we are no longer settling into the school year and that Academic Year 2015-16 is here and now! And now is the time to practice some healthy habits for living and learning. As the days get shorter in Maine, it is easy to slip into academic hibernation but reality is that 2nd quarter demands will not allow you to stay in your cave.

Stock your personal pantry with some of these ingredients:

1. Feed your mind and body with healthy options! Remember veggie patrol? You can still choose healthy choices even when your RC isn't looking!
2. Get active: it is so easy to become a couch potato as the weather gets colder but active bodies create active minds. Go outside, dance to the radio, take a walk, and/or join a team at school!
3. Sleep! While hibernation is not a reality, sleep really is a good thing. According the National Sleep Foundation, teenagers need 8-10 hours of sleep per night. According to their research, there are serious consequences to being tired:

- Limit your ability to learn, listen, concentrate and solve problems. You may even forget important information like names, numbers, your homework or a date with a special person in your life;
- Make you more prone to pimples. Lack of sleep can contribute to acne and other skin problems;
- Lead to aggressive or inappropriate behavior such as yelling at your friends or being impatient with your teachers or family members;
- Cause you to eat too much or eat unhealthy foods like sweets and fried foods that lead to weight gain;
- Heighten the effects of alcohol and possibly increase use of caffeine and nicotine; and
- Contribute to illness, not using equipment safely or driving drowsy.

Source: <https://sleepfoundation.org/sleep-topics/teens-and-sleep>

2014-15 Academic Year Director's List. *

Sahra Ahmed	Austin Nantkes
Ariana Alers	Mohamed Omame
Alex Black	Sandy Pham
Matthew Bragdon	Shelby Powers
Joey Buzzell	Victoria Rideout
Taia Federico	Jaclyn Rideout
Beverly Guay	Garrett Rudge
Megan Haney	Liz Rumery
Reilly Hesseltine	Savannah Scudder
Deseray LaBlanc	Renee Shorey
Jason Lewis	Noah Simpson
Mason Merrill	Chris Stewart
Iman Mohamed	Kifah Sulub
Fardowsa Mohammed	Hailey Wellington

*B average with no grade below C.

UNE College Visit - Saturday, October 17, 2015

Seniors Rachel St. Michel and Neesha Fatmi from Nokomis, along with Emili Yoos (Junior, Foxcroft Academy) headed south on October 17 with Jessie to visit the University of New England in Biddeford. Both Neesha and Emili were interested in seeing the school as they are hoping to study nursing, and UNE is known for having strong undergraduate programs in medicine. Rachel is interested in pursuing business, and wanted to learn more about what UNE had to offer.

Joey Buzzell (Central High School, class of 2015) is a current undergraduate student at UNE, and when he heard that UBMS would be visiting, he was eager to join and help show us around campus. Joey was there to greet us when we arrived, and to send us off at the end of the day, and made sure that we felt welcomed and well informed. Students were able to attend information sessions based on their intended program of study, so while Neesha and Emili attended a session on the nursing program, Rachel sat in on a session for the School of Business. Later in the day, Joey led the students around on a personalized campus tour, making sure to include the infamous beach on campus that he has grown to love. He wanted the students to get a chance to see all of the things that he has discovered on campus that he didn't see in his initial campus tour. All of the students enjoyed seeing UNE, and look forward to visiting other campuses.



Photos from college visits all around New England

The Future is Now: First-Generation Students, Community Engagement and Innovative Institutions

The following was written by Jonas Prida, a former ENG 101 teacher at UBMS.
Courtesy of the New England Journal of Higher Education

Compare the typical college campus today with one 30 years ago, and some stark differences become apparent. More students than ever are enrolling in college; however, graduation rates have remained fairly consistent over the past 30 years, according to the College Board. College campuses are much more diverse than before, increasing from roughly a 20% minority student population in 1990, to 42% in 2012. Another layer of diversity has been added to college campuses through the increase of low-income, first-generation students, comprising over 24% of the undergraduate population, reports the Pell Institute. All these factors should create concern for college campuses.

Perhaps in the past, we could forego discussion about the future of college campuses, and, rather than focus on the minority or at-risk populations, continue focusing on the traditional students that college campuses serve. However, successful colleges campuses will shift focus to preparing for the future, and this future is now. Ethnically diverse college campuses with low-income and first-generation students can succeed if they provide the right academic and institutional support. The best news: This support is possible without major new funding.

The College of St. Joseph is a small, Catholic liberal arts college in central Vermont. Traditionally serving white Vermont students with minimal minority representation from other parts of New England, retention rates have in recent years fluctuated between 39% and 75%, in comparison with the 70% national retention rate. In the past four years, the college's demography has shifted to an undergraduate student population that is 56% white, 30% black, and 14% Hispanic, many of whom are low-income, first-generation students. These students naturally come with a particular set of challenges that, without adjustment on the part of the institution, impede success.

Under the direction of its new president and with the efforts of faculty and staff, the college has undergone a transformation as it has adopted a new, more well-rounded approach to student success. By combining an innovative scholarship program with a strategic focus and institutional commitment to student success, the College of St. Joseph is engaging in the future of higher education.

The college's commitment to accessibility is made apparent through its Provider Scholarship Program, which is based not exclusively on academic merit but rather on a student's demonstrated intellectual curiosity, personal and professional growth and community engagement. Tuition, room and board charges are locked in over a student's four years, while a student's scholarship increases each year. In return, students are required to perform 15 hours of engaged community service, maintain a 2.0 GPA, participate in career preparation, and take part in one on-campus activity each semester.

Simultaneously, the Provider Program empowers students through engagement in the community. The Provider Scholarship Program currently involves 154 students, 77% of the full-time undergraduate population. Only two years in, Provider Program scholars have had a measurable impact upon the college's Rutland, Vt. community. More than 7,400 service hours were logged in two years, and over 70% of students engaged in more than 15 hours of service each semester—a testament to the importance students place upon service to the community. Given CSJ's student-body makeup, Provider scholars welcome the opportunity to give back. As one scholar said, "Each year is better than the last, as you begin to offer more of yourself to a cause greater than yourself."

Students have completed service with a variety of agencies, collectively working to address the needs of the Rutland community. Their roles include teaching elementary school children how to compost, working with food distribution efforts, completing an entire renovation of a transitional apartment at the local women's shelter, reading weekly to children, Bingo games with elderly residents, or cooking a meal at the transitional home for low-level offenders. Provider Program scholars are dedicated to transforming someone else's life as they improve their own.

Student success as a community effort, requiring faculty and staff perspectives, has led to the restructuring of our First Year Experience (FYE) program, designed to help first-year students successfully adapt to the college campus and surrounding community. This has been a critical effort, given the vulnerability of first-year students during their first weeks of college, and the fact that statistically, they are more likely to withdraw from an institution between their first and second years of college. This new curriculum focuses on skill development such as time management, self-advocacy, forming allies with faculty and staff and, with the help of a first-year "Advocate," choosing a career path. There is also crossover between our first-year experience program and the Provider Scholarship Program, as community service opportunities have been intentionally embedded in the curriculum.

Additionally, the college has a committee dedicated to looking at issues that affect student performance and success. The Student Success Committee, which includes faculty and staff representation from academics, athletics and student life, meets regularly to identify gaps and barriers to student success. The committee's goal is to discuss items related to students' needs and proactively implement data-driven plans of action to facilitate student success.

The college made institutional choices to support its efforts in retention and student success, and these choices were made with little impact on the budget. In 2013, the college instituted a "third space learning day" on Wednesday. Growing out the need for experiential learning, third space learning mixes traditional academics, student support and community service. The morning has the first-year experience course, a learning commons where all full-time faculty are required to hold office hours, an hour for student clubs and a community lunch. The afternoon is set aside for Provider activities, allowing all students to participate in community service. The cost to the college for this reorganization was zero: All it took was buy-in from faculty, staff and students looking for new ways to improve student success.

The college also has integrated student-focused service into its infrastructure. As a way to highlight food issues in America—an issue many of our lower-income students are familiar with—the college started the Provider Patch, now producing vegetables used in CSJ's dining hall, as well as being donated to local organizations. Co-curricular activities, often seen as separate from college academics, are coordinated with classroom activities, providing students with opportunities to move from one learning space to another. The activities are driven by students, and implemented by the administration. These approaches will cost any college surprisingly little, but the rewards in retention, satisfaction and success are great.

This model is not for every small college; the College of St. Joseph is lucky to have a committed faculty and staff, impressive administrative support and vision, and a signature program in the Provider Scholarship for undergraduates. But for colleges serious about retention and success issues and lacking unlimited budgets, its framework of integrated learning communities and scholarships that reward where students arrive instead of where they have been is replicable. For innovative colleges, the future is now.

TUTORING SERVICES NOW AVAILABLE!!

UBMS is excited to offer a NEW academic year service to all UBMS students --- **long distance tutoring!** We are thrilled to have Cory Lemay join the UBMS staff this year. If you are interested in having academic support in math, science, writing, and/or study skills, Cory is available to work with you online. Interested? Talk with your UBMS counselor or contact Cory directly at Cory.lemay@maine.edu

A bit about Cory: Cory Lemay is a third year secondary education major at the University of Maine in Orono. Cory grew up in southern Maine with his seven siblings. He deeply enjoys photography and hiking, which often combine in the form of nature photography. He has taken math courses up to precalculus, and has a fond place in his heart for chemistry, biology, and psychology. Over the summer, he worked for the USM Upward Bound program as a guide, working in the chemistry and SAT-math courses. He also has experience in assisting students as they write college essays. Once he graduates he plans to teach biology and psychology in high school.



Foxcroft Academy Masquerade Ball encourages creativity and design



Raven Nally, a Junior at Foxcroft Academy, was ready for the ball with her one-of-a-kind mask! Foxcroft Academy hosts a masquerade ball every Halloween and Raven went all out this year to create her own mask. The mask was inspired by a computer game as Raven shared "I had recently obtained 'Borderlands 2' as a prize and became obsessed with the psycho character. The character uses 'funny quips' and has become my 'all-time favorite villain'. I wanted a good excuse to make a mess and be creative!"

She went to work and made an amazingly detailed mask using paper mache, sunglasses, computer fan, and sculpture clay (sounds a bit like the summer group projects). She describes the process "I used acrylic paints and I dried the paint with a blowdryer for a crackle effect. It took me 2 days total to make the mask. I used a \$5 mask from goodwill as the base and then edited the initial mask by changing the nose shape and then use the paper mache mix from a blender to make it moldable." As it dried, she was able to mold it into the shape of the character. Once it was dry, she painted the mask by hand.

Raven plans to study Mechanical Engineering at University of Maine in the near future! She is interested in 3D design and creativity is an important aspect of engineering. Raven creates and sells digital art through the website RedBubble where you can find various original designs on different products.

<http://www.redbubble.com/people/ravennally>

COLLEGE FIRST IMPRESSIONS

UBMS interviewed two class of 2015 alum, Alex Black and Joey Buzzell

Alex Black

Q: *What has surprised you most about college?*

A: It was definitely how few math classes I'd actually be able to take before graduating and the class restrictions in general. The classes you choose are all meaningful, because of their opportunity cost. Each class blocks out a bunch of other classes that you could take, and that was a bit surprising and disappointing

Q: *What is your favorite class? What is it like?*

A: Multivariable calculus. It's fast-paced mathematical fun, and it introduces to a lot of material that has opened me up to new opportunities already. The class itself is just lecture with three problem sets a week for homework, excluding exam weeks.

Q: *Describe a typical day.*

A: Weekdays are different from weekends, but I'll describe my Wednesday for you. I wake up at 7:30 to get ready for 8:15 breakfast before my 9:00 Multivariable Calculus class. After an hour of Multivariable, I head directly to Elementary Russian for another hour. Then I go to the QSR Center (math tutoring place where I plan to work in future years), check my homework, and turn it in. From there, I head back to my dorm, grab my stuff for the second half of the day and meet a friend at 11:45 lunch where I help them with Calculus 2 for an hour before heading to Psychology at 1:00 for yet another hour. After Psych, I go to the library and do a final edit of my Poetry and Poetics homework before printing it and heading to class at 2:30. I'm done with classes at 3:45 and do math in the QSR center until 6:15, when I meet my friends for dinner. After dinner, I do more homework until 8:30, when I have Quizbowl until 9:30. After Quizbowl, I hang out with people with the common room until about 11, when I finish the last of my homework and go to sleep. Basically, every minute counts.

Q: *What is the atmosphere like in your dorm?*

A: Friendly would honestly best describe it. I live in Wertimer at Hamilton, and it's really far away from essentially everything on campus. Thus, we made an isolated community founded upon not wanting to walk up a hill to have fun.

Q: *What is the best advice you can give for getting along with your roommate?*

A: Set clear boundaries and get an idea of their schedule. I'd highly suggest setting up a system, where you wake each other up if you think the other will sleep in and miss class. It has already saved both me and my roommate multiple times.

Q: *Have you joined any clubs or organizations? If so, which ones and what do they do?*

A: I've joined a lot, at least as many as I could given my schedule. I am in gaming club, which meets on Friday nights and is for people who prefer to play board games over partying. I am in roleplaying club, which meets on Saturday nights and is for people who prefer to play Dungeons & Dragons over partying. I am in Hogwarts at Hamilton, which is a Harry Potter themed improv performance group that does shows on Halloween for the local community kids (Until 10 pm, when we start the late night adult show). I do Quizbowl and trivia night, which meet on Tuesday and Wednesday nights respectively. Quizbowl is academic trivia, while trivia night is general and competitive. Finally, I'm in athletics, which is a club that prepares for Putnam competition, the competitive undergraduate mathematics exam.

Q: *What is it like having freedom and time between classes and at night? How is time-management different than high school?*

A: It mainly feels like I don't have to waste much time with doing unnecessary things throughout the day. All of my classes meet 2-4 times a week totalling in an average of about 15 hours of class time a week, compared to 35 in high school. Homework restricts most of that freedom for me though, since I take the maximum amount of credits possible per semester by choice. Generally, it's all just more self directed, and I take responsibility for my time, since I've chosen all the ways that I spend it.

Joey Buzzell

Q: *What has surprised you the most since you arrived at college?*

A: I have been really surprised at the amount of things to do at college. I have actually had to pace myself in order to not become over committed and or over involved. There is a day where every club is lined up and it is really tempting to write your name down multiple times. Just be careful to not sign up for too many things. Also, saying no to an event is a thing. You need to take time to get your academics done first so if that means missing a comedy show or movie night, then it might be the better option to stay in for the night.

Q: *What is your favorite class? What's it like?*

A: I love Biology 105 and Lab here. It is a hybrid on ground / online course where you listen to lecture for 1:20 and then do online homework and quizzes. The class is very interactive and accommodates multiple types of learning. The tests online are for practice more than anything and adapt to your learning so if one topic needs more weight than the other, the questions will be geared toward helping students get a handle on the topic.

Q: *Describe a typical day.*

A: This is a really hard question to answer because everyday is different. I am the type of person that has an excel sheet planning my entire day and have already seen that things change. Although your classes stay the same throughout the week, different instances pop up and you can find yourself doing things completely on a whim. That comes with the joys of your freedom. I also find it great because I work my best at night so I will work really late and then sleep during the day when I am off from school. It is all about finding what works for you.

Q: *What is the best advice you can give for getting along with your roommate?*

A: We have a roommate agreement that we have made. Every room here has to make one but if you are not required to do it I say make one anyways. It is a social contract you are making and if both roommates are set with the terms it is a good foundation to making sure that whatever conflict may arise has some sort of plan laid out in the agreement.

Q: *What is the atmosphere like in your dorm?*

A: I am not going to lie. Living in a dorm is hard. There are people that are sometimes not considerate of quiet hours. Some people can get on your nerves. In college people experiment with alcohol and marijuana and that can sometimes cause conflicts. I personally sometimes just find that I need a break from the residence hall. It is an adjustment. Unlike Upward Bound, you might not be best friends with your entire floor. But you will adjust nonetheless.

Q: *What is it like having freedom and time between classes and at night? How is time-management different than high school?*

A: I really like the setup of college. I can work according to my strengths and abilities. I work at night and have built my schedule around that. My sleeping schedule has been affected but that means that when I am able to work. It is also better for me not having the same classes everyday and able to space out when I work on which topics.

Fall Reunion 2015: Witter Farm Review

On November 18, UBMS held their fall reunion at DPC and Witter Farm. We were so excited for the opportunity to visit Witter Farm, UMaine's agricultural center, for a tour of the facilities, meeting with faculty, and a presentation by UB summer staff member Matt Dube (Individual Project Mentor; Statistics Instructor!) Matt is earning his PhD in Spatial Information Science and Engineering, but earned his undergraduate in mathematics, which he uses in his involvement with Witter Farm by providing statistical analysis of data gathered by professors and veterinarians associated with the Farm.

An Interview with Matt Dube

Q: *How did you get involved in working with Witter Farm?*

A: I got involved with the Witter Farm based on personal relationships built with Upward Bound Math-Science. Jeremy Swist had a relationship with Dr. Robert Causey, the Director of the barn. Dr. Causey went to trivia one night and told us about a data situation that he had for a research study. He asked me for advice, and then after that, I was involved.

Q: *Can you give a short preview or overview of what your research with Witter Farm has been about?*

A: I have been involved with two projects with Witter and a research lab called Biologically Applied Engineering, LLC. The first project concerns the safety of thoroughbred racehorses based on the type of racing surface (dirt, synthetic, or turf) and the radius of the turn. Over a four-year period (2009-2012), over 3,000 horses were euthanized according to the Equine injury Database, a veterinarian's log combined with track conditions and other factors related to the horse. Collaborators from the University of Maine, the University of Central Lancashire, Michigan State University, and the Kentucky Horse Racing Commission have come together to attempt to better understand how decisions about surfaces and geometry impact the kinematics of the horse itself. The second project has to do with the practice of horse breeding. Much like in medical situations, studies in veterinary science consider a control sample (given a placebo) and a treatment sample (given some sort of various treatment that is meant to be studied). The problem with such a design is that requires a lot of individuals to achieve reliable results statistically. Dr. Causey (who is interested in theriogenology) and I (interested in data science) have devised a different type of experimental protocol that reduces the number of horses needed to run powerful statistical tests, thus increasing the amount of confidence we can have in statistical results. The key to this study is that the American Jockey Club keeps records of every attempted conception of a mare (in essence a population). We can use the population as a baseline for tests using techniques of regression. We are in the process of getting access to this data in conjunction with a colleague at Louisiana State University, with hopes to explain how age impacts foaling rate, how prior breeding history impacts foaling rate, and also how these have evolved over time.

Q: *What advice do you have for students who are interested in agricultural sciences or animal health?*

A: There are a few pieces of advice that I have for students interested in these things. There is more to farming than waking up early and back-breaking labor. So much of farming in a modern context has to do with biological engineering, biology, chemistry, and even information systems. I work with geographic information systems (GIS). In my work with that technology, I have done some work in the area of precision agriculture, helping a local Maine blueberry company (Cherryfield Foods, Inc.) to better manage pests and to better aide its crops through irrigation. None of this would be possible without GIS. Statistics are also crucial, as they help to make better predictions over time, but also help in evaluating different methodologies. Statistics is really a must have skill as our world changes. With regard to animal science, biology is critical, but I would also contend that statistics is critical here as well. Focus on your math and science--you will need it.

Q: *Has working with the farm brought you any opportunities you would not have otherwise had?*

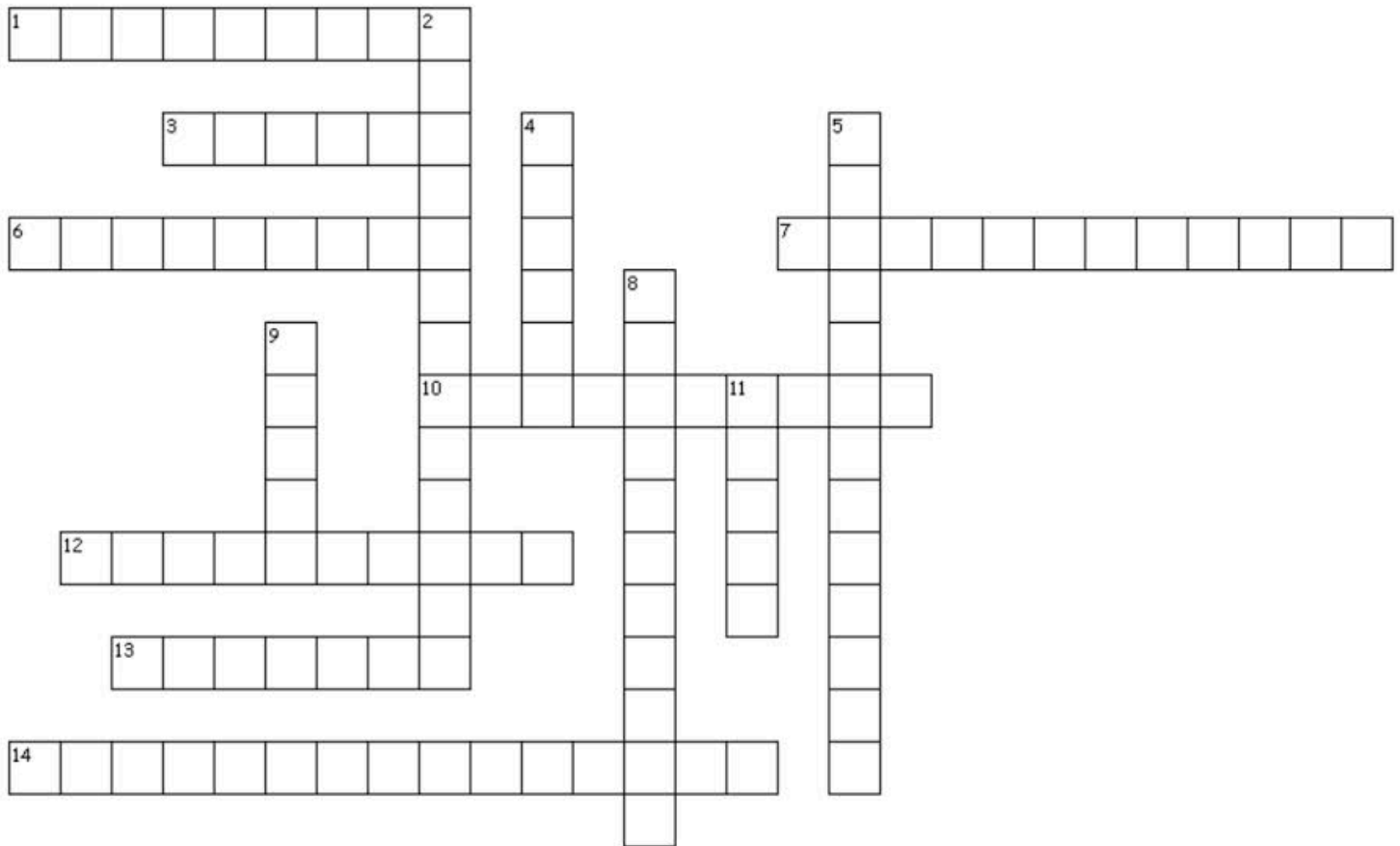
A: Working with farm has given me valuable experience in data science, one of the fastest growing areas in academic research. It has given me the opportunity to contribute meaningfully to academic research in a far different area than my specific domain. As a prospective faculty member, the experience has helped me enormously, either through gaining letters of recommendation, future tracks for academic study, or collaborators for future work as I move on to other institutions.

We hope this tour serves as an example that, no matter what your interests are, careers in STEM are relevant and provide access to those passions.



College Crossword

See how well you know the college process by filling out the crossword below!!



Across

1. College degree usually requiring two years of study.
3. The office that bills students for college related costs.
6. Part time employment funded by the federal government that helps cover the costs of college education
7. Money awarded for academic merit or things you've accomplished.
10. Financial aid application for some private institutions or scholarships
12. Official document of students academic and testing record.
13. Cost to attend college classes excluding room and board, textbooks, and other fees.
14. Statements or letters of endorsement written on a students behalf.

Down

2. Applying for admission early and having to enroll if accepted.
4. Money provided that doesn't have to be paid back
5. College degree requiring four to five years of course study
8. Applying for admission by an early deadline without obligation to enroll if accepted.
9. Money borrowed that you must pay back after college.
11. Federal form required from all students who wish to apply for need based financial aid.