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Welcome to the Mathematics Department at Seattle University!

In the mathematics department at Seattle University you will find a fantastic group of friendly, collaborative, and enthusiastic students and faculty. As students, particularly incoming freshmen or transfers, it can be difficult to navigate a new campus and city. Seattle University is a phenomenal school filled with great opportunities, and it is our hope that you find the next few years positive and impactful.

This handbook was written by former students to provide a thorough reference to college life at Seattle University from the student point of view. We hope you find it useful, and wish you the best of luck in your undergraduate education. So, from fellow students to you, welcome to the mathematics department!

Go Redhawks!

Cheers,

Class of 2018

Degree Options

The mathematics department at Seattle University offers five degrees. For a Bachelor of Science (B.S.) degree in mathematics: general mathematics; applied mathematics; pure mathematics; actuarial science. The double-major, or Bachelors of Arts (B.A.) degree option is in general mathematics. However, a B.A. student may take a wide range of courses offered in the specialized B.S. degrees.

A great thing about the mathematics degree is that you have a lot of credits available to take several electives. Any course not required in your major counts as an elective. This can range from
other mathematics courses, to engineering, to economics, to English writing; you pretty much make it what you want! This allows you the opportunities to pursue a double major or minor in another field of interest. Or, you can choose to take a few courses in another field simply to gain the extra knowledge. Thus, although the degree titles are specified, you have the power to mold your education into whatever you want it to be! Simply talk to your assigned advisor about what options are available. You can also email the professor teaching a course of interest. Most faculty at Seattle University, regardless of the department, are more than happy to answer any questions or concerns you might have. In this sense, there is a culture of openness between departments to help you as the student.

“Buckle on your epsilons”

As a mathematics major, you will have to take a series of “proof-based” classes (you’ll soon understand the humor in the section title). In these classes you begin to learn the core of mathematics, proving theorems and understanding foundational theory and intuition. For instance, you will first learn to prove “when is a number even?” or “when is a number odd?” Until now, you have probably just taken this statement for granted. However, now you must understand why these statements hold true. This logical way of thinking is different and oftentimes extremely difficult to initially grasp. As a result, several students are overwhelmed and lack confidence when first exposed to proof.

We feel the need to make it clear to you as a new mathematics major that this is coming. But, DO NOT BE AFRAID! Your professors want you to succeed, and they understand that proof writing is a skill that is hard and takes time to grasp. As long as you go into these classes motivated and ready to learn something new, you will be okay!
Math Community Rooms

There are essentially two community rooms for mathematics majors: ENGR416 and ENGR301A. *room locations might change upon completion of new engineering building.* ENGR416 is the primary mathematics community room and holds several books. You can use this room to relax, do homework, or meet other mathematics personnel (faculty, staff, students). Typically, several students and professors will enter and leave the community room throughout the day. As such, the community room is a great place to make friends and meet people! The room is code locked and can be received from the mathematics administrator in BANN415.

The other room, ENGR301A, is the math/physics computer lab. In it you can find more books, several mac computers, and other students. Unlike the mathematics community room, ENGR301A is mostly used by juniors and seniors (although anyone is more than welcome to be in it!) who also participate in undergraduate research. However, many students utilize both ENGR301A and ENGR416. The code for this room can also be received from the mathematics administrator.

Also, be sure to check out the Bannan fourth floor hallway for up-to-date information about department talks and events, faculty and student research papers, amongst others!
Student Check-List

Here is a brief list of important things every (incoming) mathematics major should have at Seattle University:

- Door codes for ENGR416 and ENGR301A
- After-hours building access on your student ID card (please see your advisor or Dr. Christine Cole)
- Mathematica downloaded on your laptop. Although you get free access to Mathematica on the virtual desktop, it is nice to have access to it when not connected to wi-fi
- LaTeX downloaded on your laptop (or sign-up on overleaf.com or sharelatex.com). LaTeX is a compiling language used to make formal mathematics documents; your math textbooks are typed in LaTeX (please talk to any mathematics faculty about LaTeX and they can help you get started)
- Some expo markers and an eraser (or if you are so inclined, some fancy chalk); it’s convenient to have these items in your backpack because you never know when you might need them!

Need a Campus Job?

There are many on-campus jobs for both work-study and non-work-study students. Regardless of being work-study eligible or not, here are a few jobs associated with the Mathematics Department:

- **Tutor** for SUM Corps (Math Dept. outreach initiative)
  Location: Bailey Gatzert Elementary or Middle College High School (in Loyola Hall)
  Pay rate starts at: $16.00/hr
  Contact: Dr. Katya Yurasovskaya
  yurasove@seattleu.edu
- **Tutor** for Learning Assistance Programs (LAP)
  Location: 2nd floor of Lemieux library
  Pay rate starts at: $16.00/hr
  Contact: Melissa Pico, LAP
  learningassistance@seattleu.edu

- **Learning Assistant** (teaching assistant) for LAP
  Location: 2nd floor of Lemieux library
  Pay rate starts at: $16.00/hr
  Contact: Dr. Christine Cole or Dr. A.J. Stewart
  colech@seattleu.edu or stewaral@seattleu.edu

- **Math Lab Assistant**
  Location: 2nd floor of Lemieux library
  Pay rate starts at: $16.25/hr
  Contact: Dr. Mark MacLean
  macleanm@seattleu.edu

- **Math Paper Grader**
  Location: N/A
  Pay rate starts at: $16.25/hr
  Contact: Dr. Mark MacLean
  macleanm@seattleu.edu

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**Academic Assistance**

Seattle University offers several sources of assistance for students, both for academics and mental health. The following are free available resources:

**Learning Assistance Programs**: offers tutoring for most 1000-level mathematics courses. You will typically meet a tutor consistently once per week (although twice per week is a possible option). Furthermore, through the learning assistance programs, most mathematics courses 1000-2000 level have a learning assistant that is responsible for hosting weekly 1.5 hour review sessions.
Math Lab: located on the second floor of the Lemieux library, there is a mathematics student hired to help you with math questions you might have, particularly regarding homework. Think of this as a sort of drop-in tutoring.

Disability Services: If you suspect you might have a learning disability, you have the potential option of having extended time on homework and tests, as estimated appropriately, student notetaker, as well as a low stress test taking environment. Most people are unaware that a learning disability need not be physical, but an invisible disability, such as a learning disability. The disability services office is located in the Loyola building on the upper mall of campus.

Phone: 206.296.5740

Counseling and Psychological Services (CAPS): Seattle University provides free on-campus counseling by trained and licensed professionals. Should you feel depressed, home-sick, overwhelmed, or anything else, please consider scheduling an appointment. Be forewarned, it sometimes takes a few weeks to schedule an appointment, so the sooner you contact them, the better. However, CAPS also has emergency drop-in hours (see website, since they change). CAPS is located in the Pigott Pavilion, underneath the Bellarmine dorms.

Phone: 206.296.6090

Places to Study and Relax on Campus

Here are a few locations that we find particularly convenient to study on campus:

- Your dorm room/apartment/house
  Noise level: low-high
  Food/drink available to buy: depends on your pantry
  Reservations: no
- **Dorm lobbies, Campion 12th floor, Bellarmine basement**
  Noise level: medium-high
  Food/drink available to buy: depends
  Reservations: sometimes for the rooms in dorms

- **Lemieux Library, 2nd-4th floors**
  Noise level: low-medium
  Food/drink available to buy: yes
  Reservations: sometimes for the rooms

- **Math community rooms**
  Noise level: low
  Food/drink available to buy: no
  Reservations: no

- **Bannan, Engineering, Garrand, and Pigott classrooms**
  Noise level: low
  Food/drink available to buy: no
  Reservations: no, but might be occupied. Most rooms are available after 5:00pm. Public safety might kick you out of the rooms around 10:00pm, but if you ask politely, they sometimes let you stay.

- **Law Building, 1st floor**
  Noise level: medium
  Food/drink available to buy: yes
  Reservations: no

- **Student Center/C-street/Hawk’s Nest Bistro**
  Noise level: medium-high
  Food/drink available to buy: yes
  Reservations: no

When the weather is warm and sunny, here are a few secret gardens/locations on campus where you can study and relax:

- **Garden behind the Loyola Building**. Can be accessed from the upper mall; you will see a trail.

- **Garden behind the Casey atrium**. Can be accessed the same way as for the previous garden, or from the Casey atrium.
- **Garden on Madison.** Located behind the Hunthausen building. Can be accessed by entering Hunthausen and then taking a left toward the end of the main hallway.

- **Gardens on Broadway.** Located behind the Admin building, adjacent to Broadway and Madison St. Can be accessed from the Broadway and Madison streets, or from walking behind the Admin building.

- **The Broadway garage.** Although not a good place to study, if you ever want a beautiful aerial view of the city on campus, go here and take the elevator up to the top open-roof level. It can be accessed by walking up the hill that goes between the Lemieux library and engineering building. Located along Broadway.

Places to study **off campus** typically include coffee shops, which can be found in the Food and Coffee section. A personal favorite is to study at the University of Washington. Sometimes, a change of campus scenery is nice (check out Café Allegro near UW, or the third floor of the UW Allen library).
Libraries & Bookstores

Libraries:
- Lemieux Library
- University of Washington Libraries (you are eligible for a UW library card as an SU student. To get a UW library card, please see the help desk on the second floor of the Suzzallo library at UW, and be sure to bring your student ID). The UW math library is located on the 3rd floor of the Padelford building (be warned! Padelford is a maze!!!).
- King County Library System

Bookstores:
- Ada’s Technical Books and Café
- Elliott Bay Bookstore and Cafe
- Magus Books

Other math-related stores:
- Math n’ Stuff
Here are a few locations to get food on campus. For hours, check SeattleU’s website, since they are subject to change.

- The Bottom Line (Pigott)
- The Byte (Lemieux)
- C Street (Student Center)
- The Cave (Campion)
- The Hawk’s Nest Bistro (Student Center)
- The Sidebar (Law Building)
- Vending machines are located at the bottom floor of Bannan by the biology department, and on the third floor of Pigott by classroom PIGT-307.
Recreation & Activities in Seattle

Outdoors & Recreation:
- The Arboretum
- Cal Anderson Park
- Frye Art Museum (on Capitol Hill, near campus)
- Gasworks Park
- Georgetown
- International District (good restaurants and Asian culture)
- Kayaking
- Kerry Park
- Pike Place Market
- Pioneer Square (day time…not night time)
- San Juan Islands
- Seattle Art Museum
- Seattle Asian Art Museum (in Volunteer Park)
- Seattle Bouldering Project
- Seattle Convention Center
- The Space Needle & Seattle Center
- University of Washington
- Vashon and Bainbridge Islands Paddle boarding
- Volunteer Park

**Theater, Movies & Music:**

- A Contemporary Theater (ACT)
- AMC Theaters
- Arts West
- Benaroya Hall (home to the Seattle Symphony)
- Cinerama
- Egyptian Theater
- 5th Avenue Theater
- Pacific Northwest Ballet
- Pacific Science Center IMAX
- Paramount Theater
- Regal Cinemas
- Seattle International Film Festival (SIFF) Uptown
- Seattle Repertory Theater
- Seattle Theater Group
- Whim W’Him (contemporary dance)

**Capital Hill:**

- Century Ballroom (swing dancing)
- ALL THE RESTAURANTS (see food subsection)!

**Bars & Breweries (for over 21 years old):**

- Bar Sue
- Cha Cha’s
- The Chieftain
- Comet Tavern
- The Garage
- Ghost Fish Brewery (gluten free)
- Linda’s Tavern
- Optimism
- Outer Planet Brewing
- Rachel’s Ginger Beer
- Red Hook Brew Lab
- Rhein House
- Seapine Brewery

Food (nearby, just to name a few...):

* indicates late night food

😊 indicates PERSONAL FAVORITES!!!

American & Sandwiches

- Blue Moon Burgers (Burgers) happy hour Wednesdays!!!
- 😊 Byrek and Baguette (Sandwiches)
- * Dick’s Burgers (Burgers)
- 8 oz. (Burgers)
- Happy Grillmore (Burgers)
- Honey Hole (Sandwiches)
- * Lost Lake (American) open 24 hours!!!
- Niche gluten free
- Subway (Sandwiches)

East-Asian

- Aloha Poke (Hawaiian)
- *Ba Bar (Vietnamese)
- 😊 Gokan (Sushi)
- Green Leaf (Vietnamese)
- Katsu Burger (Japanese fusion)
- 😊 Little Uncle (Thai)
- Marination Station (Korean fusion)
- Migoto (Sushi)
- Momiji’s (Sushi)
- Panwa Thai (Thai)
- Pho Bac (Vietnamese)
- Seattle Deli (Vietnamese)
- 😊 Yoshino Teriyaki (Japanese)

**Desserts**

- 😊 Cupcake Royale (Donuts, ice cream & cupcakes)
- 😊 Frankie and Joe’s (Ice cream) *vegan and gluten free*
- Hot Cakes (Cake & ice cream)
- Mighty O’ Donuts (Donuts)
- 😊 Molly Moon’s (Ice cream)
- Regeant (Chinese, but just go there for the pastries)
- Salt and Straw (Ice cream)

**Pizza**

- Big Mario’s Pizza
- Dominos
- 😊 Ian’s Pizza
- Pagliacci
- Southpaw
- Via Tribunali
- 😊 Zeek’s Pizza

**Etcetera**

- Annapurna (Indian/Tibetan)
- Chipotle (Mexican)
- Nate’s Wings and Waffles (Chicken and Waffles)
- 😊 Tacos Chuki’s (Mexican)
- 😊 * Zobel (Ethiopian)

**Grocery Stores & Markets**

- Hau Hau Market (Asian market, good for produce)
- Lam’s Seafood Market (Asian market, good for produce & seafood)
- QFC (general)
- Safeway (general)
- Trader Joe’s (general)
- Uwajimaya (Asian grocery store & market)

Coffee:
- Café Presse
- Caffe Vita
- 😊 Cherry Street Coffee House
- Mighty O’ Donuts
- Seattle Coffee Company
- Starbucks
- 😊 Starbucks Reserve
- Stumptown
- 😊 Victrola Roastery and Café

Transportation

The best way to get around the Seattle metro area is by the metro bus system. We recommend downloading the app “OneBusAway” for easier directions and bus lines. Typically, bus fare is around $2.50-$3.25. However, you can check out an ORCA (bus) card from the Student Center front desk for a day. You can also purchase an ORCA card for a discounted student price at Public Safety.

For reference, the 49 bus is what takes you up Broadway towards the University of Washington, and it runs very frequently.

You can also take the light rail, which is a sort of shuttle train that goes between specified locations. You can take the light rail directly to UW, as well as to the airport. The closest light rail station is about a half mile north up Broadway.
The Putnam Exam & Mathematical Competition in Modeling

There are two (inter)national competitions that Seattle University partakes in each year. The first, Putnam exam, is a nationwide exam taken by undergraduate mathematics majors. It consists of twelve extremely challenging problems that are broken up into two 3-hour sections, each with six problems. Each question is worth 10 points for a total of 120 points. The median score is 0 points, and even getting 1 point is a HUGE accomplishment! However, this is not to scare you, but rather to let you know that the experience is what matters most. The purpose of the Putnam exam is to test how clever you are in solving mathematical problems. Yet, taking up to linear algebra (MATH-2320), or even better introduction to advanced mathematics (MATH-3000) puts you in a place to potentially do well. Seattle University has several students partake in the Putnam each year. As of 2018, the high score for any Seattle University student in the mathematics department is 20 points. If you are interested, please talk to any of our faculty.

The second, Mathematical Competition in Modeling (MCM), is an international competition where groups consisting of typically three undergraduates are given approximately 98 hours to submit a formal report presenting results of a mathematical model, solving a posed physical problem. This exam is taken at the beginning of winter quarter in February. Ultimately, your group chooses amongst three complicated problems and creates an appropriate mathematical model. This is a fantastic opportunity to work in a group, as well as get real-world experience in mathematical modeling. For more information, contact Drs. Eric Bahuaud and McLean Sloughter.
REU’s, Internships, Grad School, & Industrial Careers

At Seattle University, most of the students go out looking an industrial job, or aim to get into graduate school towards a Masters or PhD. The personalized education the department provides several opportunities to get an internship or research experience for undergraduates (REU)! The difference between an REU and an internship is that in an REU you spend typically 8-14 weeks doing research at another institution. Whereas, an internship ranges from research at a corporation, to assisting a firm. Both experiences are impressive on a resume or curriculum vitae for graduate school and jobs.

There are many resources for career development offered at Seattle University, but here are a few tips that we recommend as you proceed in your mathematics education at Seattle University:

- It’s OKAY not to have a firm idea of what you want to do. However, you should still apply for opportunities that will put you in a good position for future endeavors. For example, get a tutoring job, talk to faculty early on, or apply for internships. These experiences will make transitioning into a more specific path much easier!
- Ask about internships, REU’s, and research early on.
- Get to know your professors! Attend office hours, work hard, and build personal relationships with your teachers. After all, you’re paying for the smaller class sizes. These relationships will open the doors to great letters of recommendation!
- Take a plethora of courses outside of mathematics. Industries and graduate schools want to see that you know how to apply the mathematics to real-world problems, REGARDLESS of your mathematics specialization. Take a few coding, engineering, physics, chemistry, or economics
classes. Having a wider range in your education significantly strengthens your mathematics degree!!!

- In addition to talking to your professors, also get to know the juniors and seniors! They have loads of insight and experience that you should take full advantage of.

- LEARN TO CODE!!! As a STEM field and with the constant advancements in technology, knowing how to code is a crucial aspect of being a mathematics major. Several courses at Seattle University implement coding in Mathematica, MATLAB, and/or Python. However, we personally feel that the best way to grasp coding is to do it more than what is required in the courses. Take some coding classes, do research with a professor that requires coding, or learn it on your own. Talk to your advisor about this, because it is truly important, especially for industrial jobs!

Research & Other Academic Opportunities

Research

Several professors at Seattle University have undergraduate researchers. Conducting undergraduate research with a professor has several benefits including:

- Academic connections with their colleagues
- Advanced mathematics beyond undergraduate level
- Individual problem-solving skills
- Letters of recommendation
- Possible salary (as a part-time job)
- Presenting at conferences

If you ever find yourself wanting to do more mathematics with another professor, start emailing or talking with faculty whose research areas interest you. Read their websites, skim through their publications, and get a feel for what peaks your interest. Since
Seattle University is a smaller institution, these research opportunities exist for a wider range of students, and you should take full advantage! Most universities don’t offer as many undergraduate research opportunities as Seattle University.

Moreover, even if you are a mathematics major, your research need not necessarily be in mathematics. You may also ask faculty in other departments to join their research group. Obviously, it helps if you are either a double major or have taken a course in that department, but this is a very viable option!

**Other Courses**

As mentioned earlier, you can take elective courses with other departments, including physics, biology, chemistry, and engineering. During your junior and senior years, you have the chance to take some 3000 and 4000 level electives from other departments, upon approval of the professor teaching the course. Some courses that students have taken upon approval from the respective departments include, but are not limited to: circuits, signal and system processing, modern physics, thermodynamics, fluid mechanics, heat transfer, mathematical methods.

*note: some of these courses are contingent upon completion of the intro physics series (mechanics, electricity and magnetism, waves and optics), and/or other similar course series.*

**Reading Groups**

Since Seattle University is a smaller school, the department is unable to offer as many courses and special topics as larger institutions. Although we typically offer two to three electives each year (e.g. topology, cryptography, sabermetrics, asymptotics, control theory, advanced linear algebra, etc…), it is difficult to guarantee that a course you want to take will be offered during your undergraduate education. However, any course you are interested in taking that is not offered as a formal class can be supplemented with a reading group. Basically, a reading group is
an informal course where you meet with a faculty member once or twice a week to learn another topic; these can be in the form of reading a book together, or the faculty giving informal lectures.

For instance, suppose you want to take a course in number theory, but it will not be offered as a class. Then, simply ask a faculty member with expertise in this area if they have time to do a one to two credit reading group with you throughout the quarter. There is no guarantee the faculty member will have the time, but most often they do. As such, although the department is unable to offer a wide variety of courses consistently, they find a way around it to give you a holistic education.

Closing Remarks

If not already articulated, this is a fantastic department and university. The faculty here truly care about your education and are willing to go the extra mile for your success. All they ask is that you put in a similar effort. However, if you are willing to study hard, grow from your mistakes, and explore the innumerable opportunities offered, then you will find a successful and fruitful undergraduate experience! Congratulations again on your acceptance to Seattle University and welcome to the department!