

# University of Waterloo Mathematics Student Handbook: A Final Summary Report

Presented for: University of Waterloo, Faculty of Mathematics

Presented by: Orange Draft Technical Communications Group

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## Executive Summary

For the past several months, the Orange Draft Technical Communications Group has been crafting a unique handbook, specifically targeted towards first-year students within the Math Faculty at the University of Waterloo. With 6,671 students enrolled in the faculty as of Winter 2018, the Math Faculty is the University's second largest faculty, only behind Engineering. Thus, our team identified a unique need for student engagement within the campus. From this need was born our new website (*uwhandbook.online*), tailored to fit the needs of these students.

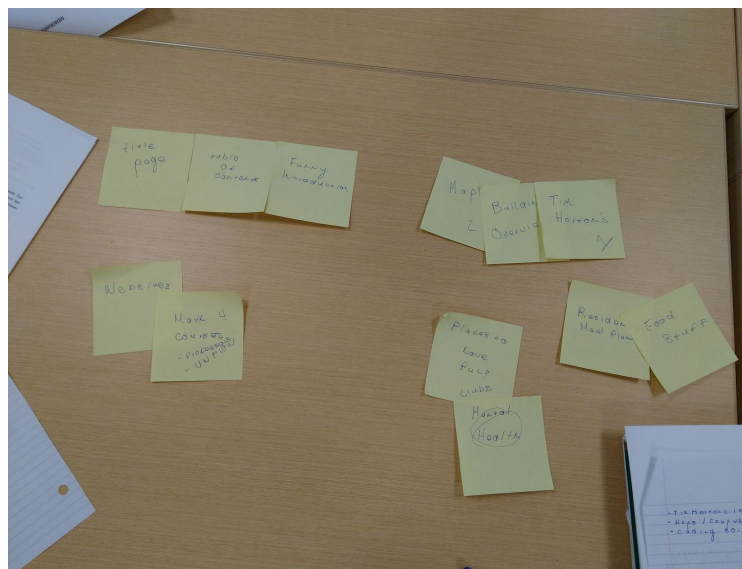
Enclosed in this report are Orange Draft's final research conclusions, documentation of internal communication, as well as screen captures of the newly functioning website. Much of the data included in this report is based upon a survey launched by Orange Draft Communications, entitled "Student Handbook Survey." Additional data is provided by materials posted around the campus and online. From these diverging planes of research, we gathered that the primary needs of students fell under several categories. These are the subsections of our handbook that are laid out in this report, with the most pertinent being placed first.

We thank the University of Waterloo for this unique opportunity, and we truly hope the main concerns of students have been addressed with our website. We greatly enjoyed working with the University and would be honoured to collaborate again in the future.

Should any questions arise, feel free to contact us by email at [OrangeDraftGroup@gmail.com](mailto:OrangeDraftGroup@gmail.com), or contact the project supervisor at 416-867-5309.

# Student Body Research

In order to assess the true needs of students enrolled in the University of Waterloo Faculty of Mathematics, we undertook significant research. Initially, our team had slight conception of the domains in which students likely wanted a larger breadth of information (figure 1.1). These domains included *navigation*, *mental health* and *residences*. However, we felt that having concrete information was more significant.



**Figure 1.1** An early brainstorming activity



**Figure 1.2** Cover of "mathNEWS" magazine

### ***Preemptive Research***

In the drafting stage of our handbook, it was determined that the most effective method of gathering data on our target audience was to distribute a questionnaire. In order to develop pertinent questions for this survey, we consulted several sources. First, we examined the “mathNEWS” publication, which claims to be “funded by and responsible to the undergraduate math students of the University of Waterloo.” The September 2018 edition of the magazine features the “Do U Know Da Wae” meme, which features a character from the game, *Sonic the Hedgehog*. In the version of the meme featured on the cover of the magazine (figure 1.2), the character says, “Show Me Da Wae (2 MC).” The character wears a lanyard that reads “Watcard: First Year.” MC, the Mathematics and Computer Building, is perhaps the center of student life within the Mathematics Faculty. This cover comically portrays a common problem on campus: first-year students being unable to navigate through the campus.

In general, we found that the “mathNEWS” magazine provided a great wealth of information. In a column titled “Looking Back at my O-Week”, a second-year student reflects on their orientation week experience. This student thanks their orientation leader for “helping get rid of the homesickness, even for a moment.” From this, it was suggested that intimate details of student life should be revealed within the handbook. Additionally, we found that most editions of the “mathNEWS” magazine were quite verbose, generally lacking a great amount of pictures. This suggested an audience which could be receptive to longer paragraphs of prose.

Ultimately, much of the information gathered by our group came from the University of Waterloo Reddit. This social media platform has approximately 30,000 subscribers, which closely matches the number of enrolled students during the Winter 2018 term. We discovered that some of the posts were related to breadth requirements within a program, which some students may not be aware of.

## ***Survey Rationale***

### *About*

To help generate audience profiles and empathy maps, the Orange Draft Group has created the Student Handbook Survey. The survey consists of a maximum of 32 multiple choice and 9 short answer questions, with the exact number of questions varying based on the results of previously answered sections. Designed to provide us with detailed and personalized data about anonymous correspondents, the survey remains reasonably short and easy to complete. Its main purpose is to help us split the first-year student population into different audience groups -- giving us not only a good understanding of their background, but also their awareness and usage of the campus and student accessible services. When writing the student handbook, based on the responses received, we may choose to omit sections with less importance or focus more on areas with less awareness amongst our audience groups.

Link to our survey:

[https://docs.google.com/forms/d/1FWUf0v\\_QdcTCkL0MoJQdRg4h-5p3-iWcLIqux6Mn7ck/edit](https://docs.google.com/forms/d/1FWUf0v_QdcTCkL0MoJQdRg4h-5p3-iWcLIqux6Mn7ck/edit)

### *Design Motivations*

Designed to be applicable to a wide range of students from the undergraduate population, the survey is split into two sections -- first-year students and non first-year students. Regardless of the current academic term of the correspondent, the survey questions focus on experiences and opinions relevant to first-year students. Students pursuing Master's or Doctoral degrees are excluded from the sample group, because they may not have completed their undergraduate education at the University of Waterloo and if they did, would most likely have forgotten many of their first-year experiences. Due to the fact that the survey is being published on the University of Waterloo subreddit, we explicitly ask if correspondents are enrolled at the University of Waterloo to avoid answers from professors, alumni and non-UW students.

### *Survey Format*

The Student Handbook Survey is split into four major sections, all of which correspond with the possible topics of the student handbook -- math faculty services, navigation, student life and food. The questions in each section are typically designed to gather information about how familiar the correspondent is with a specific topic and how often

they interact with it. If we find a high correlation between unfamiliarity and low rates of interaction for a given topic, we may choose to focus more on it when designing the student handbook.

The short-answer questions scattered throughout the survey have been designed to provide us with a deeper understanding of the correspondent's thoughts and feelings related to certain topics. Understanding these two aspects of our audience groups enables us to better choose our tone and method of addressing topics throughout the handbook. Short-answer questions also provide us with opinionated data, which may be used in a opinion or advice section of the handbook, with permission from their original source.

### ***Audience Profiles***

In this section, we outline the various audience profiles developed from data retrieved in our survey. The survey was launched on the University of Waterloo Reddit and garnered 20 responses. While, ideally, we would have liked more responses, we feel that along with the previous research, our sections are well-justified. While the main target audience was simply first-year mathematics students, we felt this could be expanded upon.

Referring to Table 1.1, this profile represents an outlier within our target audience. In reviewing our survey responses, we discovered that 27.8 percent of the respondents were currently completing their 2A term. In crafting this persona, we also accounted for the many students who indicated that they spend the majority of their free time completing homework and study material. This persona also represents the majority of respondents who indicated they were not intimately familiar with the many clubs and events on campus.

Name: "George F."

<p>General Characteristics</p> <ul style="list-style-type: none"><li>• Gender: Male</li><li>• Faculty: Mathematics</li><li>• Term: 2A</li><li>• Major: Computer Science</li></ul>	<p>Hobbies/Pastimes</p> <ul style="list-style-type: none"><li>• Spends most time studying</li><li>• Plays video games occasionally</li><li>• Is aware of several clubs, but doesn't have interest in joining any</li><li>• Doesn't partake in events outside of school often (partying, clubs)</li><li>•</li></ul>
<p>Routines</p> <ul style="list-style-type: none"><li>• Infrequently uses the bus (several times a month)</li><li>• Doesn't eat on campus, but often eats at the University Plaza</li><li>• Walks from Albert Street to campus everyday</li><li>• Stays on campus for most of the day (DC Library)</li></ul>	<p>Personal Traits</p> <ul style="list-style-type: none"><li>• Intelligent, studious</li><li>• Quiet and reserved</li><li>• Has a few close friends, but not incredibly outgoing</li></ul>

**Table 1.1 Audience Profile 1**

Name: "Lila M."

<p>General Characteristics</p> <ul style="list-style-type: none"><li>• Gender: Female</li><li>• Faculty: Mathematics</li><li>• Term: 1A</li><li>• Major: Computer and Financial Management</li></ul>	<p>Hobbies/Pastimes</p> <ul style="list-style-type: none"><li>• Part of the Cross Country Team</li><li>• Would like to join other clubs but does not have time to do so</li><li>• Occasionally goes out to parties on the weekend, but is somewhat uncomfortable</li><li>• Spends significant amount of time with boyfriend</li></ul>
<p>Routines</p> <ul style="list-style-type: none"><li>• Takes the bus several times a week</li><li>• Is familiar with GRT bus routes</li><li>• Lives off-campus with several friends from high school</li><li>• Spends most of time working at home</li><li>• Eats off campus fairly often, usually with friends</li></ul>	<p>Personal Traits</p> <ul style="list-style-type: none"><li>• Outgoing and friendly</li><li>• Has large group of friends from high school, wishes to make more friends in university</li><li>• Is generally a good student, though nowhere near the top of her class</li><li>• Wishes to raise grades to get into a graduate program</li></ul>

**Table 1.2 Audience Profile 2**



While the Faculty of Mathematics is often stereotyped as overwhelmingly male, we found approximately half of our respondents were female. Thus, it was important for us to include a true representation of the student body. This second audience profile also represents the few students who claimed to be familiar with the GRT bus routes.

Examining Table 1.3, we see another subsection of our target audience. As many respondents suggested that they regularly eat on campus, it is fair to assume that many students live on campus.

Name: "Kemar Q."

<p>General Characteristics</p> <ul style="list-style-type: none"> <li>• Gender: Male</li> <li>• Faculty: Mathematics</li> <li>• Term: 1A</li> <li>• Major: Computer Science</li> </ul>	<p>Hobbies/Pastimes</p> <ul style="list-style-type: none"> <li>• Enjoys reading, artistic pursuits</li> <li>• Spends significant amount of time completing homework</li> <li>• Has large number of friends</li> </ul>
<p>Routines</p> <ul style="list-style-type: none"> <li>• Lives on residence (REV)</li> <li>• However, rarely eats on campus</li> <li>• Often eats at the UW Plaza and at the restaurants on King Street</li> <li>• Doesn't use the buses, doesn't travel far from campus</li> </ul>	<p>Personal Traits</p> <ul style="list-style-type: none"> <li>• Quite and sensitive</li> <li>• Generally shy, though manages to easily makes friends</li> <li>• Is not enjoying the Math Faculty, wishes to switch to environment</li> </ul>

**Table 1.3 Audience Profile 3**

Examining Table 1.4 (see following page), we see another subsection of our target audience: the Chinese international students. This fourth audience profile pictures a student, coming from China, who lacks confidence and needs financial support.

Name: Lin LingLing

<b>General Characteristics</b> <ul style="list-style-type: none"><li>• Gender: male</li><li>• Age: 19</li><li>• Faculty: Math</li><li>• Term: 1B</li><li>• Major: Combinatorics</li><li>• <b>International student</b></li></ul>	<b>Specific Characteristics</b> <ul style="list-style-type: none"><li>• Needs financial support: <b>loan and bursary.</b></li><li>• <b>Often feels stressed. Does not know how to cope with it.</b></li><li>• <b>Has no idea how to find his first co-op job.</b></li></ul>
<b>Routines</b> <ul style="list-style-type: none"><li>• Wakes up very early to go to 8:30 AM class.</li><li>• Studies the whole day <b>anxiously.</b></li><li>• Sleeps at 3:00 AM.</li></ul>	<b>Personal Traits</b> <ul style="list-style-type: none"><li>• Intelligent</li><li>• Quiet</li><li>• Introvert</li><li>• Perfectionist</li></ul>

**Table 1.4 Audience Profile 4**

Table 1.5 pictures a profile of a current computer science student who is having a hard time navigating around campus. Even if the person takes the bus frequently, she only goes to a set number of locations, thus she has difficulty finding new places. As for food, she has limited knowledge of the buildings offering food services on campus and ends up going to same place over and over again.

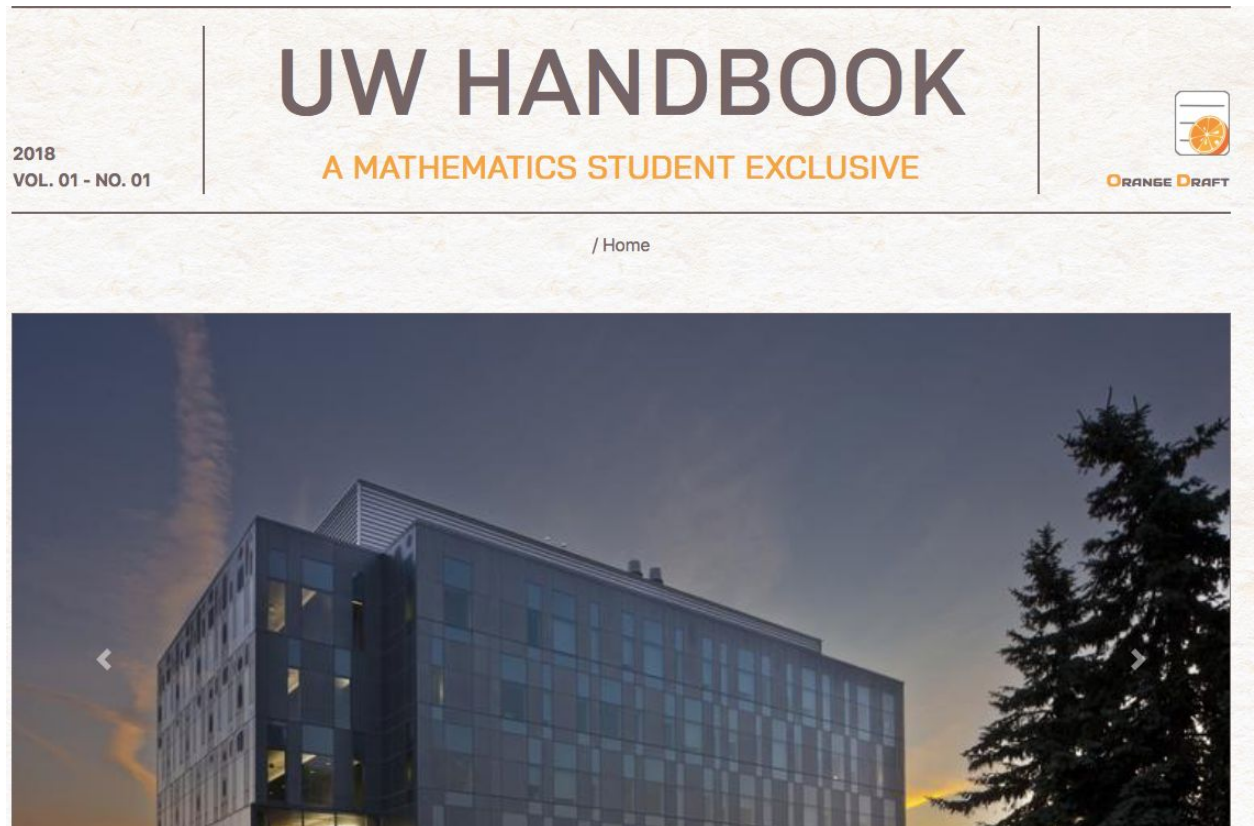
Name: Heejae Kim

<b>General Characteristics</b> <ul style="list-style-type: none"><li>• Gender: Female</li><li>• Age: 20</li><li>• Faculty: Mathematics</li><li>• Term: 1A</li><li>• Major: Computer Science</li></ul>	<b>Specific Characteristics</b> <ul style="list-style-type: none"><li>• Have <b>limited knowledge</b> of the buildings offering <b>food services on campus</b></li><li>• Likes working out and skating</li><li>• <b>Only familiar with certain bus routes: have difficulty finding new locations</b></li></ul>
<b>Routines</b> <ul style="list-style-type: none"><li>• Takes the <b>bus from home to campus</b></li><li>• Often <b>eats on campus or University Shops Plaza</b></li><li>• Goes skating once a week <b>to CIF</b></li></ul>	<b>Personal Traits</b> <ul style="list-style-type: none"><li>• Independent</li><li>• Bright</li><li>• Outgoing</li></ul>

**Table 1.5 Audience Profile 5**

## Subsections of Handbook

Several days ago, our website, *UW Handbook: A Mathematics Student Exclusive*, went online. Although the website is sleek and easily navigable, we felt it necessary to outline the various branches of the website. Below all the major subsections of the website are laid out, with quick explanations of significance.



**Figure 1.3** Homepage of the UW Handbook Website

## ***Navigation***

Navigation turned out to be one of the most prioritized contents to be discussed in the handbook. According to the survey, most students claimed to have difficulties finding specific locations and understanding bus routes no matter how often they use the bus so we put the most effort into creating an upgraded visual source to help students navigate around the campus more easily.

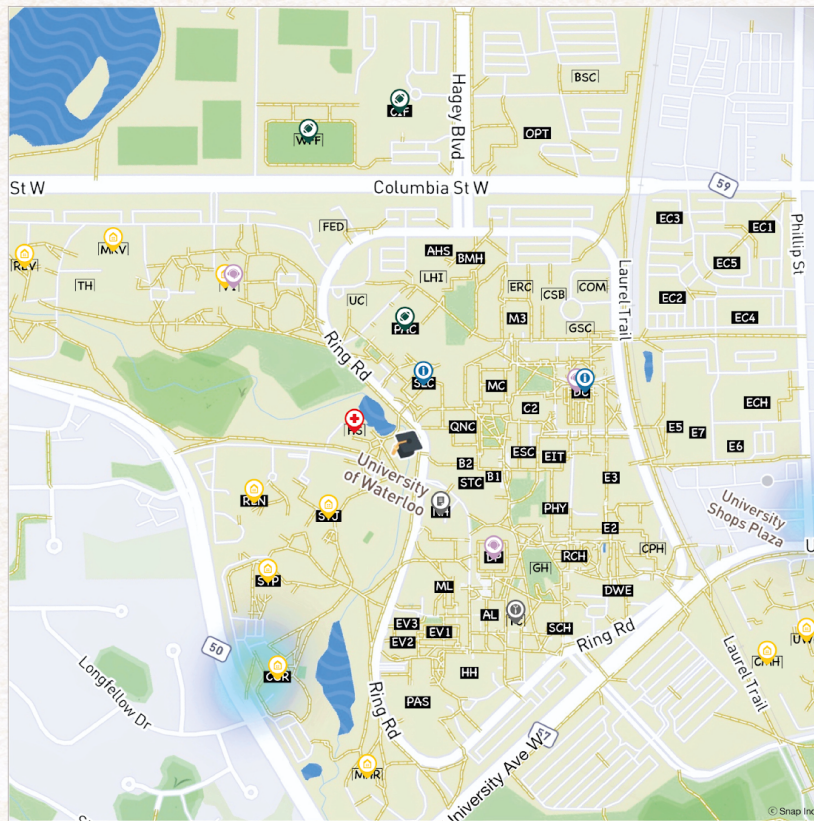
The audience profile #5 was used for this specific section. As she is an undergraduate student who is having a hard time navigating around campus, she will find this specific section of the handbook to be very useful.

While discussing design and functionality of the campus map, we decided to develop toggle controls to switch between overlay icons on the map. Using different toggles for different sections keeps the map organized and easy for students to navigate the web page. Icons for campus buildings, food court, student services, and bus stops are displayed on each layer, and below the map, specific details on what each icon represents were provided as legends. Maps for University Shops Plaza and Campus Court Plaza as well as instruction to SLC Tim Hortons were provided as separate links on the right side of the webpage as well.

Unlike the original paper handbook, when it comes to an online product, students do not have to worry about losing the paper copy of the map or forgetting to bring it with them. This medium is suitable for maps and navigation especially, because not only are they very accessible, but the toggle switches let students gather required information quickly and easily.

# CAMPUS MAP

☐ Buildings
 ☐ Buses
 ☐ Food
 ☐ Food+Buildings
 ☐ Services
 ☒ Services+Buildings



## Other Maps:

- University Shops Plaza
- Campus Court Plaza

## Navigation Instructions:

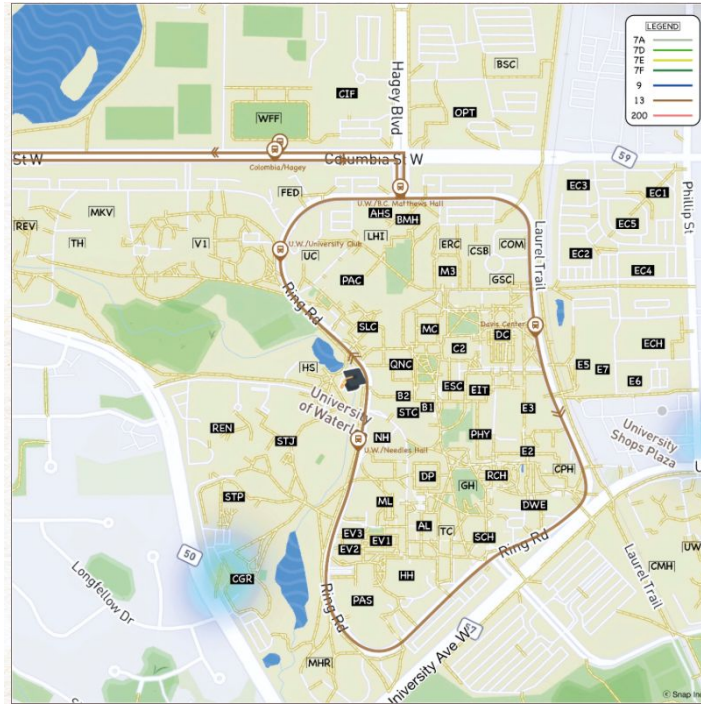
- MC to Tim Hortons

## Legend:

- |             |                 |                   |                      |
|-------------|-----------------|-------------------|----------------------|
| - Athletics | - Career Action | - Health Services | - Registrar's Office |
| - Residence | - Turnkey Desk  | - IST Services    |                      |

**Figure 1.4** Toggle controls, legend, and links for other plaza maps





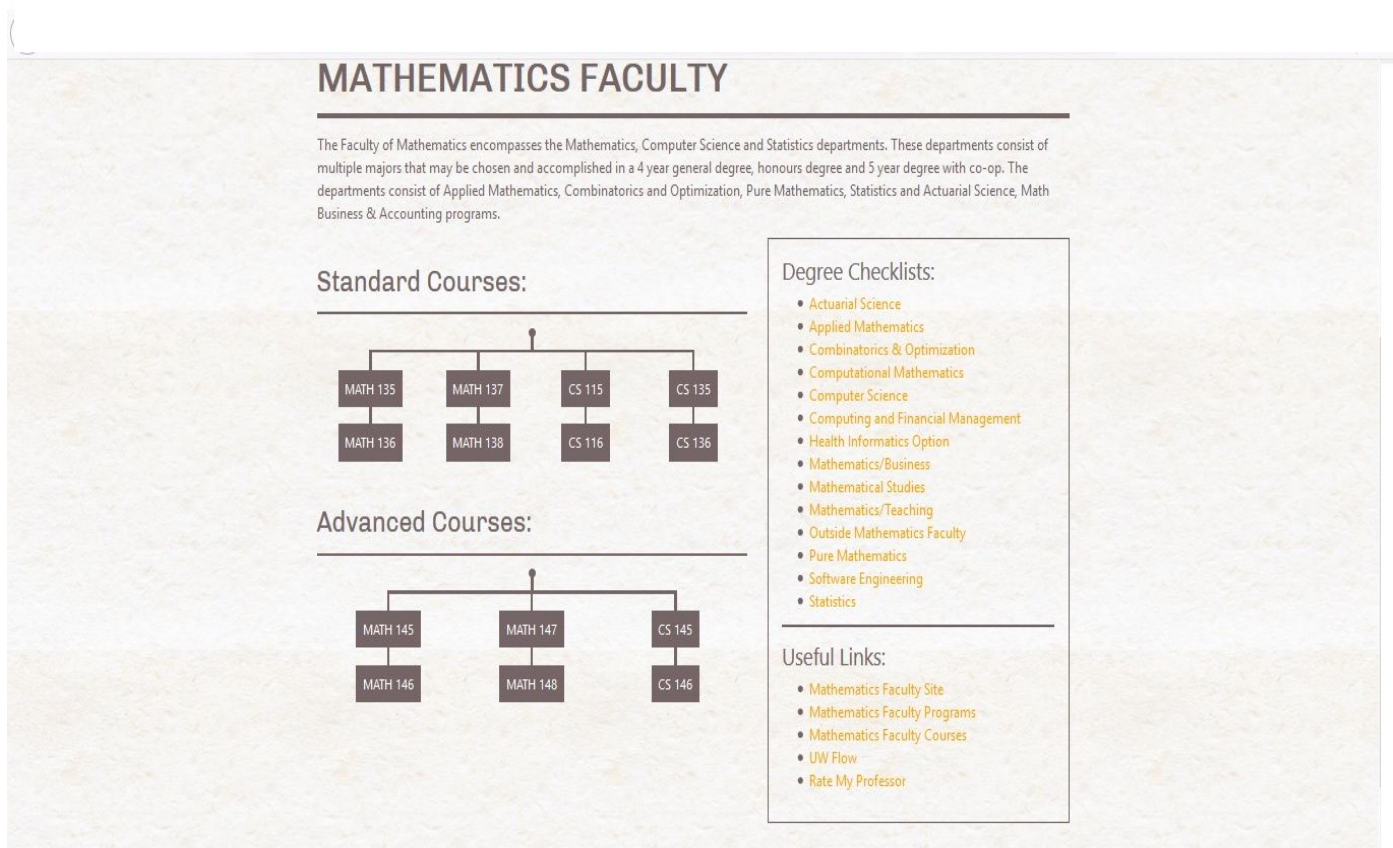
**Figure 1.5** The GRT bus route 13 (as displayed by our map)

## Courses

In our website, there is a *courses* section which shows the courses required to take in first year and their prerequisites also with the professors who will be teaching each of them. Along with the courses are links for students to check their major/plan requirements as well on the right side of the page, along with UW flow, professor ratings and the main website of the faculty. The listed courses section of the website uses tree diagram to list the courses required and the next courses to follow along with that. Users can click the course and see its description, prerequisites and the topics that are covered in it.

In the whole survey with first year and upper year compared together as one; 12% of the respondents had difficulty knowing which courses to take, where 44% sometimes had difficulty selecting their courses and 44% had no difficulty at all. Further primary research was conducted where university students were asked their experiences face to face about their first year course selections and knowledge on which courses to take and they concluded how it was hard not just selecting the courses but also how they were unable to get proper knowledge on course topics and who and how the professors

were. Having the courses section in the handbook would be really beneficial source. This page is useful for students doing their course selection during the course selection periods and the add/drop times. For students to gain knowledge on what each course covers and if it's a course for them to take or not.



**Figure 1.5** Faculty & Courses section of the homepage

## ***Student Services***

Undoubtedly, student services play an important role on the campus of any post-secondary institution. Recently, the University of Waterloo has come under fire, accused of not properly engaging students' mental health. In the Winter 2018 term, an on-campus suicide rocked the University. This tragedy was followed by widespread media coverage, culminating in a walk-out protest. The local CTV news station reported that "Suicide Death Renews Concerns about Student Mental Health" (Flanagan, 2018). Clearly, this tragedy highlights the importance of student mental health awareness. Our website easily points students towards help, should they find themselves in a crisis situation. Along with many other important domains of student services, mental health is covered prominently.



***Figure 1.6 Crisis Information***

## ***Food***

Food is an important part of a student's daily life. This section of the website introduces various places, both on-campus as well as off-campus, that students can go to for food. Whether it is to grab a quick bite to eat between classes or a place to eat in leisure, this section offers excellent selections to suit any student's needs. The food section is divided into two parts, the on-campus section and the off-campus section. The on-campus section provides a list of the places to eat on campus and where they are located. There is also a description of each place including the type of food available there, the hours of operation, and a link to site that offers more information. The off-campus section lists many popular places to eat in the plaza, the number of health infractions they have, and the average cost of their menu items. It is also able to give a random recommendation on where and what to eat based on the user's budget.

In the survey, 50% of first year respondents stated that they ate in residence everyday and 50% of first-year respondents ate elsewhere on-campus at least a couple times per



week. The survey also found that 41.7% of upper year respondents stated that as first-year students, they ate on-campus everyday. While students do not tend to eat off-campus as often, a significant number of respondents claimed that they frequently ate off-campus. Students also seem to go to off-campus for places to eat more frequently than before. 16.7% of upper year respondents claimed to never eat off-campus during their first year while no first-year respondents claimed to never eat off-campus. Due to these responses, a section focusing on food on-campus and off-campus was created to give students more choices to choose from.

## ***Student Life***

In our survey, one student described the phrase “Student Life” as “A good balance between working hard and enjoying time off.” Therefore, we made certain that a list of off-campus activities was provided in our handbook. As a first-year student, one may feel disoriented and unsure. However, we plan to empower students by discussing the names of various local establishments, such as the “Pub on King” Bar or Phil’s Nightclub. We also wanted to focus on the clubs and societies available within the University. While the University does publish a list it is rather extensive and hard to wade through (Figure 1.7). Our website, on the other hand, cuts the list down a sizeable amount, including mainly clubs of interest to those in the math faculty (Figure 1.8).

### **Association of Caribbean Students**

Categories: *Cultural*

The Association of Caribbean Students (ACS) at the University of Waterloo is a social club that is dedicated to the promotion of Caribbean culture and cultural unity in general within the University Community. Within ACS, students born in the Caribbean will be able to experience and enjoy an atmosphere in which they can relax and feel at home. Students not born in the Caribbean, but with Caribbean background will find a place where they can find out more about their ancestry, homeland and culture. Students with no Caribbean background will have the opportunity to discover more about a unique culture and participate in activities and events that they might not have otherwise been able to experience. The ACS provides entertainment and educational value to students of all backgrounds.

 [uwaterlooacs.wixsite.com/acs-guide-to-uw](http://uwaterlooacs.wixsite.com/acs-guide-to-uw)

 [uwaterlooacs@gmail.com](mailto:uwaterlooacs@gmail.com)



### **Association of Latin American Students (ALAS)**

Categories: *Academic Cultural Games, Recreational and Social Political and Social Awareness*

The Association of Latin American Students (ALAS) is a cultural, recreational and social club created with the main purpose of sharing Latinx culture with the student body of the University of Waterloo. Our goal is to be inclusive of all people who wish to become more knowledgeable and involved with Latin America, whether or not they have direct ties connecting them to the region. ALAS wishes to recognize and celebrate the rich cultural diversity presented in the different Latin American countries, and how our different

***Figure 1.7 FEDS Listing of Clubs/Societies***

## Clubs

Clubs are a great way to get together with people who share your academic or personal interests. Below are a few profiles of clubs which may be relevant to Math students. Descriptions are taken from the clubs' websites if available.

### Academic Clubs

- **Actuarial Science Club**

The UW Actsci Club is the official student organization serving UW's actuarial science undergraduate students. It is an organization for students with the common interest of pursuing an actuarial career to come together, network, learn, and improve their UW experience!

- **Computer Science Club**

In short, we exist to promote knowledge of and interest in computer science as well as allowing those interested in computer science to talk to each other. We have an office where members get together, a library of computer science books available to our members, computer accounts on our various machines and much more. Frequently we host events related to computing, including talks, tutorials and demonstrations.

- **Double Degree Club**

The DDC is an official, UW and WLU registered, student-run organization that aims to enhance the experience of Double Degree students during their university career. Thanks to the support of members like yourself, the club hosts several social events, networking/mentorship opportunities, and academic resources in an effort to enrich your education at UW and WLU.

- **UW Financial Analysis and Risk Management Student Association**

FARMSA is a non-profit student club open to all Math students at the UW, even those not in the Math/FARM program. The goals of the club: To encourage academic pursuits and interests of the Math/FARM program internally and externally. To provide services that will benefit Math/FARM students and other interested individuals academically and professionally. To improve the cohesiveness between individuals of the Math/FARM program. Provide a framework to build, improve and promote the reputation and quality of the Math/FARM program.

- **The Pure Math, Applied Math and Combinatorics & Optimization Club**

**Figure 1.8 Updated Website Version of Clubs/Societies**

### ***How to Succeed***

This section is divided into six subsections which are Co-op, Courses, Health, Schoolwork, Services, and Skills. It is a list of advice for first-year students intended to help them improve their study habits and become more efficient learners. The advice is listed in point form. When the user clicks on the advice, a description of the advice drops down, explaining that piece of advice and why it works.

From all the math students that participated in the survey, 56% of them had no difficulties finding when office hours were and 78% had no difficulties finding the Tutorial Center. However, only 11% of them actually used these services often. First-year is a big jump for most students, lacking good study habits and failing to take advantage of resources that exist to help them succeed. With the vast majority of correspondents knowing where and how to access these services but only few doing so regularly, we felt that it was important to include a study and learning advice section in the handbook.

## **Conclusion**

In researching this project, the Orange Draft Technical Communications Group came across much academic literature related to student satisfaction and higher education experience. In one particular publishment, written by noted scholar Richard J. Herdlein, is is suggested “accommodations in response to student needs that have been identified include more generalized and effective orientation for incoming students; faculty and staff orientation [and] a more complete student handbook” (2015). While the University of Waterloo’s first-year orientation is rather renowned, and is generally considered quite adequate by students, the handbooks distributed are perhaps lacking. Our team feels as though this handbook has addressed the major concerns of Mathematics students, including navigation and course requirements. We propose that the major launch of the website come during Fall 2019, with advertisement being heavy during orientation week. This should provide enough time to fully hammer out any kinks within the hardware.

## References

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