

# MATH 153 Calculus 3

## Course Information and Syllabus

Sandi Xhumari

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## 1 Welcome Letter

Dear emerging mathematicians,

Welcome! I'm Sandi Xhumari, your instructor. My favorite pronouns are he/him/his. Please feel free to share yours in the introduction. I hope you are ready to start learning some mathematics again together. I'm really excited to get to know you all, and I hope you feel like you belong in this class and we can form a healthy productive learning community. To achieve this goal, I would like to encourage you to feel free to ask questions to me and each other (this is in fact the topic of your first extra credit reflection). For example, when solving a problem, mathematicians spend a few minutes asking themselves and other students or professor questions such as:

1. What was the key idea/strategy I should take away from this problem and hopefully reuse in solving future problems or problems that I had a hard time solving in the past?
2. What difficulties did I face and what caused them? Is there any background knowledge, problem solving strategy or concept that I was missing and could have been useful?
3. Is there another way to get to the answer? Did anyone approach the question differently than me?
4. If I made a conceptual mistake, why did that happen? What should have the problem been like in order for my incorrect solution to be correct? Was there a kernel of truth in the mistake?
5. If I was unable to solve the question, do I understand all the steps of the solution? How could have I gotten there on my own?
6. Is there a way to generalize or specialize the problem so it can reveal interesting mathematical facts? Is there some connections to other problems I have solved in the past?

Even now, I remember that one time during a graduate school mathematics class... I kept asking questions every five minutes during lecture and about half of the questions I asked had easy answers I could have probably figured out later myself, but they helped slow down the pace of the lecture nevertheless, and helped me understand each step. I thought I was being annoying and disruptive, but after class the professor and several classmates surprisingly came up to me and thanked me for asking so many questions. It turned out that even though this was a graduate level mathematics class mostly full of mathematicians, I was not the only one not understanding. The professor also liked the easy engagement opportunities I provided for the class. One of the best things you can do while learning any topic is to frequently ask questions (especially questions directed to yourself), because that will make the information more memorable and connected to other things you already know. Just by asking questions, you can help yourself and others learn better, increase the sense of community and belonging in the class, as well as create a more fun and engaging learning environment for everyone. The key mantra here is that “**Questions are the answer!**” I share this and many other learning tips in my 15 minutes video [How to Learn Better](#). I believe that many students enter college not knowing how to learn effectively in a reasonable amount of time, and since there's no class per say on “How to Learn,” I hope you will use the abovementioned video to improve your learning practices throughout this class. I can't wait to see your growth this quarter!

Best wishes,

Sandi Xhumari, Ph.D.,  
Pronouns: He/Him/His  
Associate Professor of Mathematics,  
Bellevue College, WA

## 2 Purpose of Syllabus

The syllabus is meant to be a guide for your successful completion of this course. Students should frequently consult it to see the course expectations and specific details.

**Skills/Knowledge.** By consulting the syllabus students will

- know the purpose and learning objectives of the course.
- learn about the unique and flexible grading system I'm using.
- understand course structure and expectations.
- find out how their final grade for the course will be calculated.
- access instructor's information such as schedule and student hours (office hours).
- access campus resources that can help them succeed in this class, and perhaps in their academic careers.

## 3 Contact Information



Name: Sandi Xhumari  
Office: L200B  
Phone: 425 564 2606  
Email: [sandi.xhumari@bellevuecollege.edu](mailto:sandi.xhumari@bellevuecollege.edu)  
Address: Bellevue College  
3000 Landerholm Circle SE  
Bellevue, WA 98007-6406 USA

**Figure 3.1** Instructor Profile Picture.

Come visit me with Microsoft Teams (join me in a videocall) during virtual student hours (office hours) listed below for help with the material, help with homework, questions about your grade, just to chat about the class, or anything else that you think can help you succeed in the class. If those times are not workable for you, please feel comfortable contacting me to make some other arrangements. I will strive to reply to you quickly by Microsoft Teams chat (preferred), or email within 72 hours (except if you message me challenge Revisions, please allow 5 days for a response). If you don't hear back from me after 72 hours or 5 days for a challenge revision, something is wrong (I may have not seen your message by mistake, or I didn't get it, or you didn't send it, etc.), so please contact me again through MS Teams and email.

Student hours (office hours) will be split in two parts:

**Student Hours Part 1 Open Discussion:** Monday 9:30-10:15am, 1:30-2:15pm, Tuesday 1:30-2:30pm, Wednesday 9:30-10:30am will be open to any student who just wants to drop in for a quick question related to the content, wants to listen to other students' questions and my responses, or simply wants to work on the class material during the meeting asking questions as they come up. In this case, no appointment is needed. Just join the office hours meeting by clicking on the link below. In order to efficiently address your questions, please make sure to attempt them yourself first and have the notes available for me to see at the start of our meeting even if you didn't get too far (I recommend using OneNote Notebook linked to this class). This way it's much easier for me to spot the issue(s), and then have time at the end to reflect about the whole process. Note that I'm not allowed to record student hours since they're open to students from different classes, and it would be a violation of FERPA. Here's a direct link to the student hours, which I suggest you add to a recurring calendar meeting so you can remember.

Microsoft Teams meeting

Join on your computer or mobile app or room device

Click here to join the meeting

Meeting ID: 265 810 443 093  
Passcode: kz7tmW

Download Teams | Join on the web  
Or call in (audio only)  
+1 206-899-2345,,938211682# United States, Seattle  
Phone Conference ID: 938 211 682#

**Student Hours Part 2 One-On-One:** For individual 15 minutes appointments only, which you can book using the following link: Schedule Student Hours. These one-on-one appointments are mainly reserved for sensitive topic you would like to discuss such as your challenge or class performance. Note that we only got 15 minutes for this appointment, and I might have another appointment right after it, so it's best to also send me an email with your concerns prior to the meeting, and/or book another follow-up appointment if needed.

Here's a TENTATIVE schedule subject to change:

Activity	Day	Time	Place
Student Hours	Monday	Part 1: 9:30–10:15am and 1:30–2:15pm	Part 1: MS Teams
		Part 2: 10:15–10:30am and 2:15–2:30pm	Part 2: By Appointment Only
Student Hours	Tuesday	Part 1: 1:30–2:30pm	Part 1: MS Teams
		Part 2: 2:30–3:00pm	Part 2: By Appointment Only
Student Hours	Wednesday	Part 1: 9:30–10:30am	Part 1: MS Teams
		Part 2: 10:30–11:00pm	Part 2: By Appointment Only
Individual Challenge	Thursday	Class Number 27090: 10:30–11:30am Class Number 27091: 11:30–12:30am	Building L218
Group Challenge	Friday	Class Number 27090: 10:30–11:30am Class Number 27091: 11:30–12:30am	MS Teams Group Channel

4 Course Information

**Inspirational Quotes.** *"Mathematics is a way of looking at your world. Take charge of it - make it yours. Understand how you see things, and see how you understand things. Mathematics can say something about you."* - David W. Henderson

*"Whether someone solves a mathematics question quickly or slowly isn't important. What's important is the meaning you bring to the mathematics that no one else will. What's important is the pleasure you get from doing mathematics. I wouldn't ever want you to deprive yourself of that."* - Sandi Xhumari's adaptation of a quote in *"Siblings without Rivalry"* by Adele Faber, and Elaine Mazlish.

**Purpose.** I want you to remember having a meaningful learning experience, and have a better appreciation for mathematics and its power in our lives keeping in mind the above two quotes. Recent brain research suggests that the most effective way to learn something is to first play and struggle with it. Throughout the course you are expected to challenge yourself enough to fail at solving some questions. The purpose is for you to start placing more value on the process and explanation rather than the answer, as well as reinforce the fact that it's okay to fail as long as it is used productively. At times, we will discuss a particularly good error that we can learn from, or that can inspire a different solution. Throughout this course my goal is to help you improve your self-learning, critical thinking, problem solving, communication, organization and work ethics abilities through mathematics. These are crucial skills most successful people have and which your future employer will most likely want regardless if your profession is directly related to mathematics or not. My goal for you is that when you think back to this class after 20 years, you feel like you have become better in some way due to it.

**Description.** Emphasizes the study of infinite sequences and series including power series. Topics include plane analytic geometry, graphing in polar coordinates, and an introduction to vectors. Fulfills the quantitative or symbolic reasoning course requirement at BC. Prerequisite: Placement by assessment or MATH 152 or higher, with a C or better.

**Outcomes.** Students completing Math 153 should be able to

- Calculate and apply derivatives and integrals in the contexts of polar coordinates and parametric equations coordinates.
- Explain the meaning of the convergence and divergence of sequences and series.
- Determine the convergence or divergence of numerical series by applying a variety of convergence tests.
- Determine power series for common functions.
- Apply vector operations in two and three dimensions.

**Learning Objectives.** See Canvas under "Importatnt Course Content" for a pdf with the list of specific learning objectives, together with corresponding criteria and questions for each. There's a total of 16 learning objectives, which you will be working towards throughout the course. You will be completing these learning objectives both individually, and in groups. Your grade will heavily depend on your completion of these learning objectives.

**How Outcomes Will be Met.** All the above mentioned learning objective and course outcomes will be met through: Discussion boards, Online Homework, Group Activities, Challenges (my version of tests) and a Final Challenge. See Grades for a breakdown of your grade.

## 5 Course Structure

**Before Monday.** Plan to spend at least 1 hour on your own before Monday to check out the Pre-Class Activities listed on that week's module in Canvas. This definitely involves working on the In-Class Activity assignment, and annotating comments/questions on it within Perusall (see Learning Engagement for more info on it). Often it may also involve watching a short video, or reading a quick article. An announcement in Canvas will give special directions if necessary. Play with the InClassActivity before the assignment is due. At this time, you're not expected to be able to solve any of the questions, but just to explore and make as much progress as possible on them with your own creative thoughts and ideas. You will feel like lost in the jungle, but this is what doing mathematics really is like. If this feels too uncomfortable for you, then check out the recommendations below on how to adjust your routine under "Motivation and Options for learning this way."

**Monday-Tuesday-Wednesday** Work on the weekly module in Canvas including the InClassActivity, Online Homework, Reading textbook and watching videos while annotating them through Perusall. I recommend accessing them through the home page in Canvas in the order displayed, because the Canvas calendar does not list a lot of tasks. Also, don't forget to create and post a question about a certain learning objective by Wednesday midnight, and engage with the given prompts or answer other students' questions in the Weekly Discussion board in order to earn Learning Engagement points. This is supposed to take 10-15 hours.

**Study Group Meetings.** These are optional unstructured student-lead meetings you can use as you see fit to work with other classmates within different channels: "Learning Objectives," (if you want to work on questions related to different learning objectives) "In-Class Activities," (if you want to work on the weekly In-Class Activity) "Online Homework," (if you want to work on online homework questions) or "Quiet Study Group" (if you prefer to work on your own interacting strictly through chat). Note that Sandi, the instructor, will generally not be participating in these meetings to give you the freedom to take charge of your own learning and socialize with each other. If these groups get too big, say 8-10 students, then you can split off into groups of 4-5 students. Feel free to organize your own study group meetings through MS Teams by posting the date and time you'll be available, and start a meeting at that time in the general channel of our Team.

**Thursday Individual Challenge day.** Each challenge (my version of a test/quiz) is open resources, but needs to be taken ON CAMPUS individually without help from anyone (see Challenge section for more detailed explanations). It will be released on Gradescope (check Canvas challenge description for more info on this platform), which can be accessed directly from the Gradescope menu item within our Canvas course. You will get an email before the Thursday of the Practice Challenge 1 to enroll into Gradescope, and then you can always access it through Canvas. Individual challenges will be timed during the regular class time: you have 40 minutes to solve 1-2 questions on your own, and then an additional 10 minutes to scan your work, and upload it to Gradescope. That's a total of 50 minutes. The extended time can only be used with a DRC accommodation, or with the approval of the instructor in certain cases (please contact me ASAP if necessary). Running over the time limit will reduce your time in future challenges, or may result in your challenge score not being recorded at all. If you skip a challenge due to not being prepared enough, or feel like you did not do well, remember that you will have other attempts to complete it (total of 4 attempts per challenge including final). Please post your solution or partial solution in your group channel in MS Teams for other members to review within 3 hours before the group challenge meeting on Friday. Do not post it earlier as some students may have arranged to take the individual challenge at the testing center and should not be able to get help at that time. This may be the same as your individual submission the day before,

or a better version you came up during the time after the challenge. It's best if posted before the Friday meeting so that it will give your group-mates time to review your solution, and for you time to review other group members' solutions before the group challenge meeting on Friday. Also, it will make it easier to go through everyone's solution during the group challenge meeting.

**Friday Group Challenge day.** Before the group meeting on Friday, you should review all your other group mates' solutions to each question posted in your small group channel, and try to figure out the best solutions. When the group meeting starts at class time, you should discuss each solution, including issues with the incorrect solutions, and as a group come to the agreement of the correct solution for each question. This may be the exact same as one of your teammates posted, a modification of it, or totally different. All group members need to agree on the group solutions, which one student from the group will put together and submit to Gradescope as your Group Challenge solution by Friday midnight. You can continue to discuss after class asynchronously through the chat of your small group channel if you didn't come to an agreement on a certain question, but the final solution needs to be submitted by Friday midnight. If a group member does not show up for the meeting on Friday, please don't include them in the group submission unless they put in extra effort to contribute asynchronously later in the day on Friday.

With that said, here's a few tips/recommendations:

- Watch this video I made on How to learn better: HEAR and BE FASTER. Here's some more videos made by other mathematics faculty across the US giving other really wonderful tips that may resonate with you.
- To enhance your creativity, problem solving abilities, and give your brain the necessary time to process new information, start working at least a couple of days before Monday on the Pre-Class activities for the upcoming week. Play with the InClassActivity questions for at least 30 minutes. At this time, you're not expected to be able to solve any of the questions, but just to explore and make as much progress as possible on them with your own creative thoughts and ideas. You will feel like lost in the jungle, but this is what doing mathematics really is like. If stuck for more than 30 minutes on a question, then skip it and ask for help, but do try to work on it for at least 15 minutes. Resist the temptation to look up resources such as the online homework, textbook, or the Internet, unless you have a technical concern on the meaning behind a question, or terminology. During those couple of days try to periodically come back to work on these questions, or at the very least keep thinking about a few of those questions.
- Record any progress, and write comments/questions/solutions on the In-Class Activity Perusall assignment so that others may also benefit from it. Take a look at other student annotations as well to get some ideas if stuck on a question.
- Check out the In-Class Activity and challenge solutions, and try to compare with your own progress and learn from them. Make sure again to attempt to solve it yourself first.
- Imagine you will have to teach the material to a friend or family member while you're studying. Do the weekly reading/video-watching annotations, activities, and the online homework before they are due.
- Actively participate, contribute to the discussions, ask meaningful questions, make comments, attempt to solve Learning Objective sample questions, and share ideas with others in the weekly whole class discussion channel. Sometimes wrong solutions or ideas may lead to new and better solutions, and at the very least they lead to a better understanding of the subject. Remember: you're all here to learn.
- Check Microsoft Teams, and email frequently (at least once per day). I will frequently post important announcements on Microsoft Teams as my main communication channel with the class.
- Learn effectively by setting aside 10-15 hours per week to practice and study just for this class, not including challenges. If you want to effectively lower this timeframe, check out my video on the first item above for some tips.
- Read daily the whole class discussion channel on MS Teams for that week, even if you don't reply to anything.
- Do the online homework while making sure you understand each step, and are not simply following directions from a solved example. Start by trying your best to solve each question yourself first, and then go to look for help either in the online video, class notes, textbook, or ask in the weekly discussion board.
- Be persistent. Math isn't about knowing an answer immediately. The journey to a solution is sometimes the most valuable part, and may reveal important aspects of the most effective way you learn concepts. If stuck for more than 30 minutes on a question, then skip it and ask for help (I know this is very hard for many who were made to believe that giving up and asking for help is a sign of weakness instead of a way to increase effectiveness of what you're learning), but do try to work on it for at least 15 minutes (if you find yourself starting to get frustrated after 5 minutes, it's ok to get help too, but try to push this boundary further as much as you can).
- Evaluate your understanding frequently and honestly. Pretend to, or really teach the material to a classmate, and go through the reasons for the steps you're taking to solve various questions. Ask yourself why certain formulas or steps work? When would they not work, and what to do in such cases?
- Ask questions and actively search for help. When you are confused, don't understand, or need more information, ask first your classmates through posting in the weekly discussion board. I will try to hold back to give other classmates a chance to respond unless it's time sensitive information.

- It is helpful to go to the Math Lab (Join the MS Team Math Lab team), get one-on-one tutoring from the ASC (Join the MS Team ASC team), or form a study group with your classmates.

**Motivation and Options for learning this way.** Considering all the above, this class is a unique mix of inquiry-based learning, and flipped classroom. Being asked to work on your own may be quite intimidating at first, and progress may be slow, but this is the heart of this class. Recent research shows that it’s precisely this play and struggle time that will make you better thinkers, give you a deeper understanding of the concepts you’re learning, and will be the main stepping stone towards the better understanding of the textbook, and learning objectives. However, the adjustments in your learning routine may be tough at first, so I do suggest that you start by reading/annotating ahead in the textbook and try the online homework coming up before tackling the InClassActivity at first. As you grow more comfortable in publicly (in front of your classmates online) playing and struggling in math, you should try to gradually stop doing the reading and online homework before freely exploring and wrestling with the InClass Activity questions, similar to what you would do in an inquiry-based learning class. You may feel that this may be an inefficient use of your time, but in fact you’re working on your creativity, and problem solving abilities this way, which will speed up future learning and recuperate the “lost time.”

## 6 Technology Requirements and Recomendations

For this class you are required to have:

- A computer or other electronic device with internet connection that is able to access MS Teams, Canvas, and their corresponding apps or assignments.
- Either a scanner, smartphone with an app that can do scanning (I use “Genius Scan” on my iphone for instance, which is free), or a stylus and electronic device with touchscreen capability so that you can solve challenge questions, and submit them as required.

It is highly recommended but not required to have:

- A webcam, so you can share gestures or notes while explaining your ideas either during whole class instruction, group work, or student hours.
- A stylus and electronic device with touchscreen capability so that you can share your screen and work with others during group work. You can use this also to directly work on Challenge questions on your computer without having to worry about print/scan.
- A graphing calculator, if you prefer it instead of Desmos or other online graphing tools.

## 7 Textbook

We will be using Chapters 9–11 of Contemporary Calculus by Dale Hoffman. The textbook is already incorporated as reading/annotating assignments for each section through PerusAll.

You can also access the textbook online here: Contemporary Calculus

If you wish to purchase a printed copy of the textbook, you can do so by following the directions at the above textbook website. Note that some of the pages may not fully match the versions assigned for reading/annotating through PerusAll (the ones in Perusall are the latest updated versions). To earn learning engagement points in Perusall however, you need to add annotations into Perusall after doing the reading in the printed copy (see learning engagement section for more info on how to earn learning engagement ponts).

## 8 Grades

Unlike most courses, your final base grade (the letter A,B,C,D, or F without plus/minus) will be assigned based on the row(level) of the table below you qualify for (you need to complete each item in the row to earn that base grade). However, I reserve the right to raise your grade if you are an active, thoughtful participant in class and there is evidence of learning. Note that **Canvas will not be able to tell you your “current grade,”** since you will be given many chances to complete challenges in the course, but you can still check learning engagement as well as online homework points on Canvas.

Grade	Completed Individual Challenges	Completed Group Challenges	Learning Engagement	Online Homework
A	4	4	80	80%
B	3	3	60	60%
C	2	2	40	40%
D	1	1	20	20%

Note that you only need to complete each challenge once. Completing the same challenge two or more times, will not contribute to the completed individual or group challenge columns above. Also, if you do the student evaluations at the end of the course, you can get an additional 3 Online Homework extensions till the end of the quarter, and get a bump of a third of a letter grade on the Final Part 1 (ex: you deserve B, but you get B+).

### Plus/Minus or Base grades:

- **Plus:** Meet all the requirements for a base grade, the requirements for Individual or Group Challenges for the next level up, and perform well on Final Challenge Part 1 compared to the respective base grade (roughly 1 LO complete D, 2 LOs complete C, 3 LOs complete B, and 4 LOs complete A).
- **Base:** Meet all the requirements for a base grade; and perform well on Final Challenge Part 1 compared to the respective base grade (roughly 1 LO complete D, 2 LOs complete C, 3 LOs complete B, and 4 LOs complete A).
- **Minus:** Meet all the requirements for a base grade except for one, and that one is not the Completed Individual Challenges and is no more than one grade level lower; or don't perform well on Final Challenge Part 1 compared to the respective base grade (roughly 1 LO complete D, 2 LOs complete C, 3 LOs complete B, and 4 LOs complete A).

Let's run through a few examples so you can understand better the grading system. Suppose a student in the class ends up with the following numbers at the end of the quarter. What grade would they get?

- Completed Individual Challenges: 3, Completed Group Challenges: 2, Learning Engagement: 80, Online Homework: 90%, Final Challenge Part 1: A material; their course grade is a B- unless the instructor believes it's appropriate to bump up.
- Completed Individual Challenges: 4, Completed Group Challenges: 4, Learning Engagement: 80, Online Homework: 80%, Final Challenge Part 1: A-, did student evaluations; their course grade is a A (without student evaluations it's A-).
- Completed Individual Challenges: 1, Completed Group Challenges: 4, Learning Engagement: 60, Online Homework: 90%, Final Challenge Part 1: C; their course grade is a D+ unless the instructor believes it's appropriate to bump up.

One very important aspect of this grading system is that once you have met the requirements for a grade, your grade cannot go below that base grade with minus (except for issues like cheating, so don't do that). You should decide at the start of the course which grade you want to work toward and then plan your studying accordingly.

The College Grading Policy for the meaning of the letter grades A-F is explained in the current Course Catalog and can also be found at this link: [Grading Policy](#).

## 9 Challenges

There will be 4 challenges administered almost weekly, where you will be given one last chance to complete each of the 4 challenges. These are my version of tests/quizzes throughout the course, but also not the same in many aspects. Challenges are the main way I will assess your learning in the class, and provide you with feedback so you can gradually learn and improve, so it's very important you give them high priority compared to learning engagement and online homework. Individual Challenges will contribute to your Completed Individual Challenges, whereas group challenges will contribute to your Completed Group Challenges.

Each challenge will consist of 1-2 questions from a pool of specific learning objectives (LOs) as follows:

- Challenge 1 LO: 1-5 Sections 11.1-11.6, 10.1 (4 attempts on Weeks 4, 5, 6, and Final)
- Challenge 2 LO: 6-8 Sections 10.2-10.7 (4 attempts on Weeks 5, 6, 7, and Final)
- Challenge 3 LO: 9-12 Sections 10.8-10.11 (4 attempts on Weeks 7, 8, 9, and Final)
- Challenge 4 LO: 13-16 Sections 9.1-9.6 (4 attempts on Weeks 9, 10, 11, and Final)
- Final Challenge Part 2: Challenge 1-4

Unlike most courses, there are no points, percentages, or partial credit for challenges. For each of the 4 Challenges, you will have 4 attempts to complete them, where the 4th attempt will be included in Final. In this way, you are not penalized for making mistakes as long as you eventually fully understand each topic by the end of the quarter. On each challenge you will be graded with the following grading scale:

- *Complete*, which means understanding of the concepts is evident through correct work and clear, audience-appropriate explanations (even on true/false or multiple-choice questions). It is clear that the solution fulfills all relevant criteria for success stated under each learning objective. Some revision or expansion may be needed, but no significant gaps or errors are present. This will show up as 1 point on Gradescope. You will not have to worry about doing questions related to those learning objective in future challenges, except perhaps on the final challenge part 1.

- *Revise*, which means the solution is almost complete, except perhaps a few typos/errors as mentioned in my feedback on Gradescope. Use my feedback directions as well as my answer key to fill in the gaps. Check the comment box in Gradescope right panel to see if I asked you to come to student hours, or send me an email to iron out the mistakes you made and possibly answer follow-up questions. This will show up as 0.01 points on Gradescope, which will then be changed to 1 point (Complete) upon successful revision. Revisions need to be submitted within one week of grades being published on Gradescope. At this point I'm pretty convinced you're almost there, and I'm willing to help you fill in any gaps possibly going through several emails or student hour meetings.
- *Not Yet*, which means that either not enough information is present to determine whether there is a good understanding of the learning objectives, or the work contains too many significant errors or omissions. In particular, the solution does not fulfill certain parts of the criteria stated under the corresponding learning objective that are related to the given question. This will show up as 0 points on Gradescope. Carefully review the feedback and answer key so that you can get a "Complete" on that challenge in future attempts.

All challenges are open book/resources. You are especially encouraged to use Desmos.com, and Wolfram Alpha, so it's helpful to get to know these technology tools throughout the course. The only restriction is to take the individual challenges yourself, and not collaborate with other people. This means that you may not ask someone else to take your challenge, nor discuss the challenge questions with other people, online or in-person until after Friday midnight. In particular, you're forbidden to post challenge questions on "study" sites such as Chegg.com, study.com, Coursehero, bartleby.com, or question and answer sites like Stack Exchange or Quora. You may however choose to watch a video online on that topic, or read your notes, or textbook sections, but please be warned that the time constraint is there to ensure that you do prepare ahead enough to be able to answer the questions on your own with minimal help such as looking up a formula for instance. Not adhering to these restrictions will be considered cheating, may result in failing the course, and will be reported to the college. The only exception is the group challenge after the individual one, where you're required to collaborate with your group members, but you still cannot collaborate with other people outside your group. This means in particular that you cannot share your challenge solution with anyone else outside of your small group until after Friday midnight.

Students with a DRC accommodation may use the additional extra time to submit their individual challenge as appropriate with their accommodation. Submitting a challenge late may result in it not being graded at all. You will upload your challenge to Gradescope. More info on the submission process is provided within the challenge assignments on Canvas, but we will do a practice challenge on it to test it out too, so don't stress about this.

Group challenges will consist of the same exact questions as the individual challenge the day before, and will be generally due on the next day at midnight (except for holidays), but students are required to contribute to the solution uploaded by the group to Gradescope, as otherwise they will not earn a complete towards the "Completed Group Challenges" of their grade (for directions on uploading group solutions on Gradescope, see the group challenge assignment on Canvas). Groups need to submit an answer for any not completed challenge by one of the students in the group.

The Final Challenge is assessed individually during final's week as in the Final Exam Schedule. There's no Final Group Challenge, so make sure that you got all your group challenges completed by Challenge 4 Attempt 3. The final challenge will consist of two parts (one hour each). For the first part (first hour), I will pick 4 questions out of the 6 CORE LOs (designated as such in the pdf of LOs and sample questions), which I will then grade as a whole to determine if you get a plus, minus or base grade as discussed in the Grades section. The second part (second hour) consists in trying to complete any challenges you have yet to complete (if any). If you have already completed all challenges by then, you can simply skip part 2.

## 10 Learning Engagement

Learning Engagement will be perhaps the most important part of this class that will help build community and form a support system for our learning. At the end of each week you need to take a Learning Engagement Quiz in Canvas called "Week # Learning Engagement" to reflect and grade yourself on the work you did that week out of 10 points. Create-Attempt-Feedback item will determine 5 points, and the other 5 points will be determined by completing various items below. I will take off one point every day it's late, up to half the credit. This portion of the grade will be determined by the student in the spirit of ungrading. Each week you can learn in various ways, but **you have to report it on the weekly quiz for credit**. Most weeks, some or all of the following options will be available. **I tried to give you many options for learning engagement, but if you have or predict any issues with this setup, then please contact me to make individual arrangements.**

- **Create-Attempt-Feedback.** (5 points total) Creating a question based on a Learning Objective covered that week (1 point), attempting to solve one of your peer's questions or a sample question (2 points), and giving feedback to another student solution (2 points).
- Coming to student hours to ask/answer/contribute to at least one math or how to learn question (not necessarily correctly). (1 point per day).
- Reading and/or video annotating InClassActivity or other assignments through Perusall. Note that even though Perusall assignments have a fixed due date, you can still annotate them anytime during the week without any penalty. (1 point per assignment).



- Asking/answering a question, or creating a post that advances the discussion of a math topic in the weekly discussion (1 point per post for up to 2 posts per day).
- Study Groups engagement with others through Microsoft Teams (2 points for each study group you joined and contributed).
- Other engagement with classmates or activities related to the content we're studying this week. This is separate from Challenge group work and Extra Credit Reflections. (1 point).
- Reflecting about your learning progress: how did you flourish as a mathematician? how does the material we are learning connects to you and your community? Share with me any questions or concerns (1 point)!

Challenges will be largely based on the type of questions on the InClassActivities besides the Learning Objectives sample questions, so make sure to use both of those resources well. See Course Structure section for more info on the flow of the week.

**Example 1.** Say I learn math best by practice solving questions, but I need some motivation to do so. I would try to reply to one or two Whole Class Discussion posts that seem interesting to get motivated. Then solve as many sample questions as I can for each Learning Objective related to the upcoming challenge, and post them in weekly discussion and/or reply to other student posts about those sample questions. Lastly, I can try to use technology and estimations to check that my answers make sense. All these items go under "Asking/answering a question, or creating a post that advances the discussion of a math topic in the weekly discussion" category, so as long as I do 5 total so that at most two are per day, I would get 5 LE points that week in question 3. If I do the Create-Attempt-Feedback as well, I would get another 5 LE points for a total of 10 LE points that week.

**Example 2.** Say I learn math best through watching videos, reading the textbook, or interacting with other students. Let's say I earned on Perusall 1 point on an InClassActivity, 1 point on a reading, and 2 points on two videos assigned that week. The student also reflected on their learning. Hence, they earned 4 points in question 3. Due to completing the Create-Attempt-Feedback item, they earned another 5 points in question 4. That's a total of 9 points if they turned it in by that week's Sunday. If it was late 2 days, then they would get 7 points instead. If they had posted the personal reflection by Sunday in the whole class discussion instead, they would have earned a total of 10 points.

## 11 Online Homework Assignments

We will have homework online through Canvas. The due dates are posted in the Canvas calendar, but I encourage you to attempt to do most of the homework at least one day before it's due in order to take advantage of various study methods such as the pomodoro technique, active recall, or spaced learning; and especially give yourself time to struggle with a challenging question you may not be able to solve that day. You have 5 late passes throughout the whole quarter in case you need to extend a deadline. They will only extend it by 48 hours from the deadline, but you can use more than one per assignment if needed.

Generally you have 2 attempts per question, but even after this, you can "attempt a similar question" to reset with possibly a different function/numbers and earn full credit. This means that you basically have infinite tries, so you are expected to get 100% on on this category, even though 80% is all that's needed for an A in this category.

Most questions have videos or explanations attached to assist if necessary, but I do highly recommend spending at least 15 minutes yourself first on a question (but no more than 30 minutes) before watching the videos or searching additional help.

Please do your work on paper when completing homework, as challenges will require you to show your work (even for true/false or multiple choice questions), and it is also helpful to be able to go back and find your work when studying. I recommend having a notebook dedicated to homework.

Getting 100% on the homework with help doesn't mean you have learned the material, but rather you were able to follow instructions (analogously: following the GPS to a destination doesn't necessarily mean you understand how to get there). It is important that you learn the underlying ideas behind a problem, besides being able to solve it. Ask yourself: what was the point/key idea of this question? How could I modify the question to get a different outcome? How does changing parts of the question effect the process to get to an answer? How can I use it in the future? When should I use this method instead of others?

**Successfully doing the online homework should be considered the first step towards understanding the corresponding learning objectives of the course. Challenge questions are usually harder than online homework questions, which is one of the reasons for having In-Class Activities, Learning Objectives pdf with sample questions, previous quarter challenges, and the other resources provided.**

## 12 Extra Credit Reflections

Students will be assigned extra credit reflective assignments that will require a submission in either written, audio, or video formats, as well as 3 replies in writing to 3 other student posts on Canvas under discussions for each reflection due on Saturday. Each reflective assignment will give students at most 5 extra credit Learning Engagement points. It may happen that some students submit a reflection last minute, so I won't penalize for replying to others after the deadline. If there are not at least 3 other posts besides yours, you

can post the remaining replies to student submissions in reflective assignments from other weeks, and then post a comment into your own reflection assignment letting me know that other replies may be found under "X reflection." The purpose of these reflections is to explore together some issues related to the class, and improve students' mindset and math learning habits.

## 13 FAQ

**What are some learning resources options?** Class activities such as group meetings, student hours, and study groups meetings; previous quarter solutions to Challenges and In-Class Activities; the list of Learning Objectives with criteria and sample questions under "Important Course Content" in Canvas; annotating the textbook and lecture videos; and an itemized list of "Video Resources" under "Important Course Content," where you can find full lecture videos on the topics we're covering by various instructors. I hope that helps!

**How does Perusall assignments annotation grading work?** Check out the "Perusall Grading" page under "Important Course Content" module on Canvas. When you write an annotation on Perusall, please do not just copy/paste from websites, as that will be considered plagiarism. Your posts should reflect your own thoughts from the textbook/video. If you want to quote something from another source, that should not be your entire post, and you need to provide a link to the webpage you took it from.

**I'm having a hard time to complete challenges. What can I do?** Take a careful look at the feedback on the corresponding learning objectives in the challenge you tried to complete in combination with the answer key, and try to identify what went wrong. Ask yourself questions especially if you have a good understanding of all the learning objectives of the challenge. Did I solve all sample questions? If you're struggling with a question or concept (try on your own for at least 15 min but no more than 30 min) even after going through the challenge solution and learning resources options described in a previous question, there's several steps you can take:

Your first resource should be the other students in the class. Post that question under the Weekly Whole Class Discussion channel on MS Teams ("Week # Whole Class Discussion"). You and other responding to your post will be able to earn Learning Engagement points if you explain your thoughts/attempt towards solving it, regardless if correct or not. I will try to not get involved here unless you specifically call on me.

If you need an answer quickly, the Math Lab or Academic Success Center may be easy solutions. You can also message me in MS Teams (preferred), email me, or sign up for Student Hours to talk about it. If you do not receive an email back from me within 48 hours, please resend it (I may have accidentally deleted it, or skipped it, or something else).

**Why this different type of assessment method?** There's many reasons, but perhaps the top one for me is Equity/Re-Humanization. Due to COVID-19 and BLM, in the Summer of 2020 I participated in many conferences and workshops to deeply think and improve my teaching. Many students coming to BC are international students, first generation college students, part of some underrepresented group, or face certain difficult life circumstance and may initially (or sometimes during the course) get a bad grade. Getting a bad grade on one exam and/or some quizzes in a traditional setting usually heavily impacts the final grade negatively, and doesn't take into consideration the fact that a student may have eventually learned everything by the end of the quarter, even though they may not have taken the main route. Not having partial credit may seem scary, but it lessens the stress about your performance on any particular day. Your grade is determined by what you are able to accomplish on your best days, not just how you perform on a particular day.

Another reason dear to me is "Growth mindedness." With a traditional grading system of "one and done," the implicit message is that failure is undesirable and incurs penalties, whereas with this system, failure is an opportunity to improve understanding, since you're given multiple attempts with complete forgiveness.

With a traditional points based system, students are focused on accumulating points, and understand everything superficially, just enough to get on average the points needed. By banning partial credit, we force students to pick a few learning objectives to understand in great detail instead. Even if students spend no time studying a particular learning objective, we contend that the experience of pursuing deep understanding on the other learning objectives leaves them in a stronger position to engage deeply with the troublesome topic when it is needed in the future. Moreover, depth of understanding is critical to one's ability to apply existing mathematical knowledge in novel domains.

**Why is there no partial credit?** The driving reason is that it is better to deeply understand some of the course content than to understand everything superficially. Your focus during challenges is in completing learning objectives fully rather than trying to get as much partial credit on as many questions. I want you to clearly know exactly what learning objectives you have fully learned, and which ones you may still need to work on some more. In fact, in future classes, it is assumed that you fully know these learning objectives, and not just have a partial understanding. In the real world, these would correspond to tasks/projects that your employer would give you. If you partially complete a task, your employer will likely ask you to redo it, or amend it somehow (or if really bad, they might even hire someone else entirely).

Let me illustrate this with a story. When I was in middle school, I remember struggling with understanding the order of operations in arithmetic expressions, especially when it involved fractions. I could solve the examples in the homework and textbook with little to no errors since I had noticed the solution patterns, even though I did not know why those patterns held. Nevertheless I was one of the best students in the class, consistently getting high grades so even though I deeply knew that I had a shaky understanding, my grades told a different story and gave me some empty confidence. I was one of two students in my grade who qualified to go the Mathematics Olimpiad competition to represent my school (might have been 6th or 7th grade). This is a challenging math competition test involving non-traditional questions which are hard to solve using standard algorithms and usually require some creativity on top of a perfect understanding of the concepts involved. I remember struggling at a question involving fractions, and realizing at that moment that I did not have a full understanding of the order of operations when fractions were involved. Needless to say, I did not solve that question correctly, and after the test I was upset at myself and my school education for not fully learning it properly. I resolved to fill this gap, which turned out to be quite useful when we started working with equations involving variables, and later proving trig identities.

**Why is it so hard to earn a complete on a challenge?** First, it is possible I made a grading error, so make sure you check my feedback, as well as the solution provided in the Class Notebook. Second, I consider failing to earn a complete on a challenge, as part of your learning journey. When I grade, I ask myself “Will the student benefit from studying these learning objectives again?” It may take more time to fully learn certain learning objectives, and due to having multiple tries that’s ok, as long as you persist and learn them eventually. Third, you may be facing special circumstances that are blocking your learning, so consider contacting the instructor through MS Teams chat (preferred), email, or come to student hours. We can go over your study strategies to refine them.

## 14 Miscellaneous Items and College Policies

**Help with Canvas.** The instructor will regularly publish and update assignments, and weekly modules. Students need to check Canvas regularly. Students can find help for it by following the link here: [Student Canvas Help](#).

**Help with Microsoft Teams.** Your learning engagement grade will be based mainly on your weekly group discussion activity, and virtual class meeting, both through MS Teams. Students need to check MS Teams regularly. You can find help for it by following the link here: [MS Teams Help](#).

**Make-up Policy.** In general, if you’re unable to attend a challenge for whatever reason, or you don’t feel like you would get any completed learning objectives on it, you won’t be able to make it up, but you will still be able to earn full credit if you complete it in a future attempt (usually the following week). You should try to do your best (even if you know you’ll probably get a “Not Yet” on it) so that you can get feedback and identify gaps in knowledge for the next attempt the following week. Accept failure on a challenge attempt as part of your learning journey, and use it to learn and improve.

**Accessibility.** The online elements of this course are designed to be welcoming to, accessible to, and usable by everyone, including students who are English-language learners, have a variety of learning styles, have disabilities, or are new to online learning. Be sure to let me know immediately if you encounter a required element or resource in the course that is not accessible to you. Also, let me know of changes I can make to the course so that it is more welcoming to, accessible to, or usable by students who take this course in the future.

**Affirmation of Inclusion.** Bellevue College affirms the diversity of human identities and experiences and is committed to creating spaces free from harassment and discrimination (4000 Institutional Commitment to Inclusion). Furthermore, Bellevue College rejects all forms of racism, homophobia, sexism, xenophobia, religious intolerance, classism, ableism, ageism, language bias, and hate speech or actions that attempt to silence, threaten, or degrade others.

In classroom settings, we might disagree with views shared in the classroom; however, courteous, and respectful behavior and responses are always expected. When providing criticism, it is important to focus on the ideas and not the person.

Faculty are encouraged to disrupt and address hate speech and behaviors. Students are also encouraged to speak up and advocate when they experience, or witness hate speech and behaviors. Faculty, staff, and students also are encouraged to submit a report to the CARE Team regarding any concerns of discrimination, harassment, or inappropriate and disrespectful conduct. See Affirmation of Inclusion.

**Reasons of Faith and Conscience.** Reasonable Accommodations for Reasons of Faith and Conscience: Students who will be absent from course activities due to reasons of faith or conscience may seek reasonable accommodation so that grades are not impacted. Such requests must be made within the first two weeks of the course to the office of the Associate Vice President of Student Affairs (see Bellevue College Policy 2950 (<https://www.bellevuecollege.edu/policies/id2950/>)). In the event you feel you are being discriminated

against based on faith or conscience, you may refer to the procedures outlined in the college's Discrimination, Harassment and Retaliation Policy 1440P (<https://www.bellevuecollege.edu/policies/id-1440p/>).

**Annual Notice Non-Discrimination.** Bellevue College does not discriminate on the basis of race or ethnicity; creed; color; national origin; sex; marital status; sexual orientation; age; religion; genetic information; the presence of any sensory, mental, or physical disability; or veteran status in educational programs and activities which it operates. Bellevue College is prohibited from discriminating in such a manner by college policy and by state and federal law. All college personnel and persons, vendors, and organizations with whom the college does business are required to comply with applicable federal and state statutes and regulations designed to promote affirmative action and equal opportunity.

Reports of gender and sex-based discrimination, sexual misconduct, or retaliation by a student should be raised with the Title IX office (see 1440P2 for contact information). In cases where the impacted party is a student and the responding party is a college employee, the Title IX coordinator will direct the matter to the Office of Human Resources (HR). All other reports, including all reports where the impacted party is an employee, should be raised with the HR. If a report is against personnel in the Title IX office or HR, it should be submitted to the president's office for referral to an alternate designee. See Equal Opportunity (<http://www.bellevuecollege.edu/equal/>) for the Spanish and Chinese versions of the anti-discrimination notice.

**Confidentiality and Mandatory Reporting.** As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings. I will seek to keep information you share private to the greatest extent possible. However, I am required to share with the Title IX Coordinator any and all information regarding sexual assault and other forms of sexual misconduct (e.g. relationship violence, stalking) that may have occurred on campus or that impacts someone on campus. Students may speak to someone confidentially by contacting the BC Counseling Center at (425) 564-2212. The Title IX Office can be contacted at 425-564-2641 and more information can be found at Title IX (<http://www.bellevuecollege.edu/titleix/>). If you have any concerns, you may report them to: Report Concerns (<https://www.bellevuecollege.edu/reportconcerns/>).

**Science Division Policy on Cheating.** You, the student, are expected to conduct yourself with integrity. If you cheat, or aid someone else in cheating, you violate a trust. Cheating includes, but is not limited to, copying answers on tests or assignments, glancing at nearby test papers, swapping papers, stealing, plagiarizing, and illicitly giving or receiving help on exams or assignments. If you cheat, the following actions will be taken:

- You will receive a grade of 0 on the work (exam, assignment, lab, quiz, etc.) where the cheating occurred. This grade cannot be dropped.
- A report of the incident will be sent to the Manager of Student Conduct. He/she may file the report in your permanent record or take further disciplinary action such as suspension or expulsion for college.

If you feel you have been unfairly accused of cheating, you may appeal. (For a description of due process, see WAC 132H-126.) Information about Bellevue Colleges copyright guidelines can be found at <https://www.bellevuecollege.edu/policies/id-3600/>.

**Student Conduct Code and Academic Integrity.** Any act of academic dishonesty, including cheating, plagiarism (using the ideas or words of another as one's own without crediting the source), and fabrication, and inappropriate/disruptive classroom behavior are violations of the Student Conduct Code of Bellevue College. Examples of disruptive behavior include, but are not limited to, repeatedly talking out of turn, arriving late or leaving early without a valid reason, allowing cell phones to ring, and inappropriate behavior toward the instructor or classmates. The instructor can refer any violation of the Student Conduct Code to the Manager of Student Conduct for investigation. Specific student rights, responsibilities, and appeal procedures are listed in the Student Conduct Code at: Student Code.

**Important Links.** See "Important Links" page online for more information about the E-mail and MyBC, Public Safety, the Academic Calendar, the Academic Success Center, and more.

**Disability Resource Center (DRC).** The Disability Resource Center serves students with disabilities. Common disabilities include physical, neurological (e.g. Autism, ADD/ADHD), and mental health (e.g. depression, anxiety). If you are a student who has a disability or if you think you may need accommodations in order to have equal access in your classes, programs, activities, and any other services, please contact the DRC.

If you require assistance in an emergency, please meet with your individual instructors to develop a safety plan for while in class and contact the DRC to develop a safety plan for while you are elsewhere on campus.

The DRC office is located in building U Room 001. You can contact the DRC by stopping by the office at U001, calling our front desk phone number (425) 564-2498, emailing [drc@bellevuecollege.edu](mailto:drc@bellevuecollege.edu). Deaf students can reach us by calling TTY: (425) 564-6189, or by Skype (account name DRCatBC). For more information about the services we offer, including our Initial Access Application, visit our website at Disability Resource Center.

Service Animals are allowed in this classroom. Emotional Support Animals need to be approved through the DRC. All other animals will be asked to leave. If you believe you need your animal with you, please connect with the DRC and refrain from bringing your animal until a decision has been made.

**Additional Information** note about accessing Canvas from the People's Republic of China: some users have reported that they do not have full access to all Canvas functionality from within the People's Republic of China. This appears to be due to Canvas' parent company, Instructure, not fully committing to Chinese government requirements regarding internet operations within the country. The Chinese government does not inform foreign entities of their policy updates; therefore, Bellevue College cannot anticipate access to Canvas.

If you will be in China during the quarter, you should prepare for intermittent and uncertain access to Canvas.

Source: Access to Canvas in China (<https://support.canvas.fsu.edu/kb/article/1157-access-to-canvas-in-china/>).