



NAME OF YOUR PROGRAM/DEPARTMENT/MAJOR OR MINOR/CERTIFICATE  
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## ASSESSMENT REPORT REMOTE/DISTANCE LEARNING ACADEMIC YEAR 2019 - 2020

**REPORT DUE DATE: December 4, 2020**

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This is an alternative template.

Given the unusual circumstances of the 2019-2020 academic year, each program/department/major/minor/certificate has two options of assessment:

- (a) Usual assessment report based on attached template OR
- (b) Alternative assessment reflections on distance learning pivot based on this template

Every program/department/major/minor/certificate can choose ONE of the two report formats to submit

Please make sure to fill out Page 1 – Questions 1 and 2

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- Who should submit the report? – All majors, minors (including interdisciplinary minors), graduate and non-degree granting certificate programs of the College of Arts and Sciences.
  - Programs can combine assessment reports for a major and a minor program into one aggregate report as long as the mission statements, program learning outcome(s) evaluated, methodology applied to each, and the results are clearly delineated in separate sections. If you choose to submit a remote learning reflections document, it should also have separate segments for major and minor
  - Undergraduate, Graduate and Certificate Programs must submit separate reports. An aggregate report is allowed only for major and minor of the same program
  - It is recommended that assessment report not exceed 10 pages. Additional materials (optional) can be added as appendices
  - Curriculum Map should be submitted along with Assessment Report

Some useful contacts:

1. Prof. Alexandra Amati, FDCD, Arts – [adamati@usfca.edu](mailto:adamati@usfca.edu)
2. Prof. John Lendvay, FDCD, Sciences – [lendvay@usfca.edu](mailto:lendvay@usfca.edu)
3. Prof. Mark Meritt, FDCD, Humanities – [meritt@usfca.edu](mailto:meritt@usfca.edu)
4. Prof. Michael Jonas, FDCD, Social Sciences – [mrjonas@usfca.edu](mailto:mrjonas@usfca.edu)
5. Prof. Suparna Chakraborty, AD Academic Effectiveness – [schakraborty2@usfca.edu](mailto:schakraborty2@usfca.edu)

**Academic Effectiveness Annual Assessment Resource Page:**

<https://myusf.usfca.edu/arts-sciences/faculty-resources/academic-effectiveness/assessment>

**Email to submit the report: [assessment\\_cas@usfca.edu](mailto:assessment_cas@usfca.edu)**

**Important: Please write the name of your program or department in the subject line.**

**For example: FineArts\_Major (if you decide to submit a separate report for major and minor);  
FineArts\_Aggregate (when submitting an aggregate report)**

## I. LOGISTICS

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1. Please indicate the name and email of the program contact person to whom feedback should be sent (usually Chair, Program Director, or Faculty Assessment Coordinator).

Emille Lawrence, [edlawrence@usfca.edu](mailto:edlawrence@usfca.edu)

Chair of the Department of Mathematics and Statistics

2. Please indicate if you are submitting report for (a) a Major, (b) a Minor, (c) an aggregate report for a Major and Minor (in which case, each should be explained in a separate paragraph as in this template), (d) a Graduate or (e) a Certificate Program.

Please also indicate which report format are you submitting –Standard Report or Reflections Document

I will be submitting an aggregate report for the Mathematics Major and Minor.

3. Have there been any revisions to the Curricular Map in 2019-2020 academic year? If there has been a change, please submit the new/revised Curricular Map document.

There have been no revisions to the Mathematics Curricular Map in the 2019-2020 academic year.

## II. MISSION STATEMENT & PROGRAM LEARNING OUTCOMES

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1. Were any changes made to the program mission statement since the last assessment cycle in October 2019? Kindly state “Yes” or “No.” Please provide the current mission statement below. If you are submitting an aggregate report, please provide the current mission statements of both the major and the minor program

**Mission Statement (Major/Graduate/Certificate):**

There were no changes to the program mission statement.

- **Mission Statement (Major/Graduate/Certificate):**

*The USF Department of Mathematics & Statistics seeks to deliver a quality mathematics education to our majors and minors, inspiring them to appreciate, understand, and engage with clear and rigorous thinking, both in abstract and concrete settings.*

- **Mission Statement (Minor):**

*The USF Department of Mathematics & Statistics seeks to deliver a quality mathematics education to our majors and minors, inspiring them to appreciate, understand, and engage with clear and rigorous thinking, both in abstract and concrete settings.*

3. Were any changes made to the program learning outcomes (PLOs) since the last assessment cycle in October 2019? Kindly state “Yes” or “No.” Please provide the current PLOs below. If you are submitting an aggregate report, please provide the current PLOs for both the major and the minor programs.

Note: Major revisions in the program learning outcomes need to go through the College Curriculum Committee (contact: Professor Joshua Gamson, [gamson@usfca.edu](mailto:gamson@usfca.edu)). Minor editorial changes are not required to go through the College Curriculum Committee.

**PLOs (Major/Graduate/Certificate):**

There were no changes to the program learning outcomes.

- **PLOs (Major/Graduate/Certificate):**

1. Differentiate and integrate functions of one and several variables;

2. Use differentiation and integration to solve problems in mathematics and other disciplines;
3. Solve and understand linear systems;
4. Give direct proofs, proofs by contradiction, and proofs by induction; formulate definitions and construct counterexamples;
5. Read mathematics without supervision; write mathematics with correct style, including typesetting;
6. Apply mathematics to problems in other disciplines; and
7. Use technology to solve mathematical problems.

- **PLOs (Minor):**

1. Differentiate and integrate functions of one and several variables;
2. Use differentiation and integration to solve problems in mathematics and other disciplines;
3. Solve and understand linear systems;
4. Give direct proofs, proofs by contradiction, and proofs by induction; formulate definitions and construct counterexamples;
5. Read mathematics without supervision; write mathematics with correct style, including typesetting;
6. Apply mathematics to problems in other disciplines; and
7. Use technology to solve mathematical problems.

### III. REMOTE/DISTANCE LEARNING

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#### **1. What elements of the program were adaptable to a remote/distance learning environment?**

The foundational elements of mathematics instruction are in-class lectures and discussion, problem solving in groups inside and outside of class time, the occasional project, one-on-one interactions outside of class (e.g. office hours), and of course, very regular homework which requires the students to put in ample time thinking through concepts and working problems on their own. Most of these elements were highly adaptable to the distance learning environment.

For example, our faculty continued with in-class lectures through synchronous instruction by finding creative ways of replacing the standard whiteboard or chalkboard. Profs. Tristan Needham and Renée Hubert were able to purchase large whiteboards to use in their home for their Zoom meetings. Some professors, such as Prof. Cornelia Van Cott, use document cameras to present their Zoom lectures. Others, such as Prof. Jennifer Chubb and myself, use tablets and styluses to replace the whiteboard.

Groupwork is also easily facilitated using the Breakout Room feature in Zoom. Instructors can manually or randomly assign groups and bounce from group to group to check in with the students. Office hours also are easily done in Zoom, however most of our faculty report that office hour attendance was down significantly during remote instruction in the spring. This could have been due to “Zoom fatigue” or time zone issues.

All of our faculty report that they relied much more heavily on Canvas and WebAssign (an online homework system for Math 108, Math 109, and Math 110) once remote learning began. Math homework assignments are almost always written out by hand on paper. A paper assignment can be turned into a pdf using one of the many apps which turns one’s phone into a scanner. Then, this pdf can be uploaded to Canvas. Comments and feedback can be provided on Canvas very easily in the “Comments” field. Many of our faculty also began to use Canvas to administer quizzes. Similarly, WebAssign was used by the Calculus series instructors for homework, quizzes, and even for their final, in some cases.

## **2. What elements of the program were not adaptable to a remote/distance learning environment?**

There were very few elements of our program that were completely unadaptable to remote learning. Although thoughtful effort was required, our Program Learning Outcomes were met via remote learning. We are fortunate that we do not have labs or studio courses which would be much harder to adapt to a remote setting.

However, there were things that we could not adapt. We were not able to administer the ETS Major Field Test for Mathematics this past spring. The test is a paper exam taken by all graduating math majors at USF at the end of their senior year. We have used this exam to assess our PLOs since 2016, and it is a particularly good tool because we can not only compare our test results over a number of years, but we can also compare our results to thousands of

other math majors at universities across the country. It was not possible, nor wise, to adapt this exam to a distance setting.

We also were not able to adapt our Calculus Help Sessions to a distance learning environment. The sessions are peer-to-peer tutoring opportunities for Math 108, Math 109, Math 110, Math 211, and Math 230 students. Giving students this extra opportunity to get help has been very successful, however, we could not pivot towards keeping these up after March 2020. Finally, we also were not able to adapt our weekly math faculty-student social hour, commonly known as “Math Tea” to a distance setting.

**3. What was the average proportion of synchronous versus asynchronous learning for your program or parts thereof? A rough estimate would suffice.**

On average, the synchronous to asynchronous learning ratio after March 2020 was approximately 80% to 20%.

**4. For what aspects of learning is synchronous instruction effective and for which ones is asynchronous instruction more effective?**

In learning mathematics, it is necessary for the student to (a) read about a concept, preferably ahead of time; (b) hear about this concept from an instructor; and (c) use this concept in examples. The final two aspects of learning mathematics is much more effective if done synchronously. To this end, the overwhelming majority of the instruction in our program was synchronous in spring 2020. I would like to think that each of our faculty worked diligently to make all aspects of their teaching quite effective via Zoom. As mentioned above, the math faculty took extra care to ensure that the quality of communication was not compromised by being on Zoom.

Many faculty members found that administering exams asynchronously was more effective. Because students were in varying time zones, giving an exam or quiz in class for all students was impossible in many cases. To remedy this problem, our faculty chose to make exams available on

Canvas or WebAssign for a 24-hour period for all students to complete. Once the student chose to start the exam within this period, they had a fixed number of minutes (such as 90 minutes) to complete the exam. Most professors also opted to make their exam open book and notes to remove the temptation of using other students or the internet for help.

**5. As remote/distance learning continues in the current environment, what changes has the program instituted based on experiences with remote instruction?**

The Department of Mathematics and Statistics has made some programmatic changes as a result of the continued COVID-19 crisis and the resulting remote learning environment. One change we have adopted in response to remote instruction is to allow some of our courses (Math 101, 102, and 105) to opt into the Pass Option Policy for fall 2020. Many students are facing obstacles that are directly related to the pandemic and distance learning. We felt that since these courses are not prerequisites for other courses at USF, these students should be allowed to access the Pass Option Policy.

Secondly, we changed the format of our Calculus Help Sessions. Now, each of the courses Math 108, 109, 110, 211, and 230 has its own session run by a student TA via Zoom. I gave the TAs an orientation on how to provide the best assistance to students using Zoom.

Finally, I called a meeting of our full-time and part-time faculty before the start of the fall semester. In this meeting, we discussed as a group best practices for online teaching, administering quizzes and exams, and what worked and what did not work from spring 2020. Then instructors teaching the same or similar courses collaborated in breakout rooms to discuss how that course would look in the fall. Although instructors had different teaching methodologies, we all agreed that as a whole we'd work towards more compassion and understanding in our interactions with students during this ongoing pandemic. We also acknowledged that we'd likely be providing more emotional support to our students than in previous semesters.

## **OPTIONAL ADDITIONAL MATERIALS**

**(Any relevant tables, charts and figures, if the program so chooses, could be included here)**

I am attaching no additional materials in this section. I will, however, submit the Curriculum Map along with this report.