



ASSESSMENT REPORT REMOTE/DISTANCE LEARNING

NAME OF YOUR PROGRAM/DEPARTMENT/MAJOR OR MINOR/CERTIFICATE
<INSERT HERE>

ACADEMIC YEAR 2019 - 2020

REPORT DUE DATE: December 4, 2020

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
2. Prof. John Lendvay, FDCD, Sciences – lendvay@usfca.edu
3. Prof. Mark Meritt, FDCD, Humanities – meritt@usfca.edu
4. Prof. Michael Jonas, FDCD, Social Sciences – mrjonas@usfca.edu
5. Prof. Suparna Chakraborty, AD Academic Effectiveness – 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

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

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).

Daniel O'Connor (doconnor@usfca.edu)

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'm submitting this report for the **BSDS major**. It is a **Reflections Document**.

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.

No, but our new course BSDS 200 was offered for the first time during the Spring 2020 semester. Currently it is an elective for BSDS majors, but the intention is that it will eventually replace CS 333 in the list of BSDS required courses.

II. MISSION STATEMENT & PROGRAM LEARNING OUTCOMES

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 **No.**

Mission Statement (Major/Graduate/Certificate):

To deliver a high-quality data science program that instructs students in the theory and practice of mathematical and computational analysis of applied data driven problems, and to graduate students with appropriate experience in industry-standard data science tools.

Mission Statement (Minor):

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). Minor editorial changes are not required to go through the College Curriculum Committee. **No.**

PLOs (Major/Graduate/Certificate):

- [PLO1] Analyze information critically and logically in a mathematical setting.
- [PLO2] Reformulate and solve problems in an abstract framework.
- [PLO3] Express mathematical results verbally, working individually and in collaborative groups.
- [PLO4] Apply mathematical techniques to specific problem domains.
- [PLO5] Demonstrate competence with programming concepts, including software development techniques and data structures.

- [PLO6] Apply mathematical and computational techniques to real-world problems involving large, complex data sets.
- [PLO7] Visualize, present and communicate analytical results.

PLOs (Minor):

III. REMOTE/DISTANCE LEARNING

1. **What elements of the program were adaptable to a remote/distance learning environment?**
 - Data science is arguably more well suited than most majors to remote / distance learning due to the emphasis on programming projects.
 - Data science and math courses typically have a standard lecture format, which translates straightforwardly to a remote / distance learning environment. Classroom problem solving and programming activities can also take place online. In fact, the Zoom breakout rooms feature works well for these types of group problem solving activities.
 - A benefit of Zoom lectures is that the video recordings tend to be higher quality than the Echo 360 recordings.
 - Homework can be uploaded to Canvas rather than turned in physically, and I've found that writing comments on Canvas is about as effective as writing notes on homework papers. An advantage of uploading to Canvas is that we have digital copies of the homework and the comments on the homework.
 - Mentoring undergrad research projects can be done via Zoom about as effectively as in person.
 - Office hours seem to work just fine remotely.
 - Advising via Zoom meetings seems to work fine.

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

Overall my impression is that (unsurprisingly) in-person learning is superior to remote / distance learning.

- While office hours for the most part seem to have been as well attended online as they were in-person, one thing was lacking: the occasional student who would drop by to discuss more advanced or more recreational topics, motivated by pure curiosity or personal interest. This still happened somewhat, but it seemed to have happened less than with in-person office hours.
- While the Zoom breakout rooms feature can work well for group problem solving activities, sometimes a breakout room “fails” in the sense that the students in the room turn off their cameras and work independently.
- Some students interact and ask questions in lecture. But a large portion of the students, maybe 20% - 50% at times, have videos turned off during lecture. This makes it difficult to gauge how well they are following the lecture.
- The Data Science Association (DSA), which is the data science student group for BSDS majors, has been less active than usual during this period of remote / distance learning. In previous semesters they have scheduled tours of local companies, which has not been possible since we went online. I think it has also been harder for the DSA to generate excitement among its members about working on data science projects together. These things are more fun in person.
- Part of our department culture pre-Covid, for both students and faculty, has been weekly “Math Tea” events every Wednesday afternoon. We haven’t been able to effectively duplicate this experience online.
- An important part of the undergrad experience is running into students in the hallway, at the cafeteria, at sports events, etc, which of course can’t happen when not in person. So far we don't have a way to recreate that experience.

- A few of our talented BSDS majors (such as Adam Villareal) have chosen to take a leave of absence while USF is online, and their positive classroom contributions have been missed.

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

On average, it was about 80% synchronous and 20% asynchronous.

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

- Regardless of whether we are online or in person, the best learning happens when students grapple with the material on their own, struggling to solve problems, complete projects, and to understand and take ownership of the material. This fundamental aspect of learning is naturally asynchronous.
- Homework and projects seem to be naturally asynchronous activities. Data Science might be particularly well suited for online education due to the emphasis on programming projects. However, it also might be more difficult for students to develop spontaneous collaborations and learn from each other when everything is online.
- While much learning happens when students grapple with problems on their own, synchronous problem solving sessions are useful because working together is fun and students learn from their interactions with each other. For example, attempting to explain one's ideas to another student is a great educational experience. We are forced to clarify ideas in our own minds so that we can explain them to others, and we see directly the need to speak precisely.

- Breakout rooms (for synchronous problem solving activities) seem like a promising feature of online education. However, sometimes in breakout rooms students simply turn their videos off and work independently.
- Regarding lectures: I experimented with making prerecorded video lectures that could be watched asynchronously, but I reverted to live Zoom lectures because students seemed to prefer them. In my experience, without live synchronous lectures, there was not enough feeling of human interaction.
- Creating prerecorded video lectures takes a huge amount of time, due to time spent doing multiple takes and editing. On the other hand, the polished final product is a useful thing to have.
- In order to accommodate students in different time zones, I have been offering quizzes and exams asynchronously (the quiz or exam must be completed within a time window). One benefit of this is that class time is not spent on administering tests, and also I think students appreciate having some flexibility; however, this makes it more difficult to prevent cheating.

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

- During the Spring 2020 semester the “pass” option was available for BSDS major courses. However, the math department and BSDS program elected not to offer the “passion” option during the Fall 2020 semester (except for a few lower division math courses).
- As mentioned in the math assessment, the math department changed the format of its Calculus Help Sessions, so that each of the courses Math 108, 109, 110, 211, and 230 has its own session run by a student TA via Zoom. Emille Lawrence gave the TAs an orientation on how to best provide assistance to students using Zoom.

OPTIONAL ADDITIONAL MATERIALS

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