CSCI E-5a Spring 2022 Assessments

1 Assessments Overview

In CSCI E-5A, there are two kinds of assessments:

- A *formative* assessment is an assignment where you have the opportunity to work on challenging problems with feedback from the teaching staff in a low-stakes environment.
- A *summative* assessment is an assignment where the teaching staff rigorously and objectively evaluates the knowledge and skills that you have developed in the course.

In practice, formative assessments are problem sets, while summative assessments are extended take-home exams.

2 Formative Assessments

A *formative assessment* is an assignment where you'll have the opportunity to work on challenging problems with feedback from the teaching staff so that you can revise your work and improve. Formative assessments help you to build up your vocabulary of R programming techniques in a low-stakes environment where you aren't under pressure to get the answer right the first time you try.

The goal in these problems is for you to demonstrate that you have mastered the required tasks, so we grade on a 0-1 basis, with no partial credit – you have to get everything correct in order to receive credit for a problem. However, we also allow you to review the solutions, fix any mistakes that you've made, and resubmit your work (we'll cover the details of this in the next section). Reviewing the published solutions and using them to correct your work is an important part of the learning process, and we encourage you to do this. This is the point of 0-1 grading on problem sets – it pushes you to develop a high degree of mastery, but you also have multiple chances to get it ~~right~~ perfect. However, you should be conservative in your approach: it's fine to refer to the solutions to clarify a point of misunderstanding, or to give you a hint for something that you haven't been able to solve by yourself, but it's not so great to just wait until the solutions are released and then copy the code and paste it into your solutions. To be honest, sometimes if you're really lost then your only option is to carefully read through the solutions and essentially mimic them, but that shouldn't be your default strategy.

In the end, it's important that any work that you submit be your own. The whole point of a formative assessment is that it allows the teaching staff to give you feedback to help you improve, hence it's self-defeating to hand in work that's not your own – it's like hiring someone to go the gym and workout on your behalf. You are welcome to form study groups, discuss questions on the course discussion board, consult with family or co-workers, search the Internet, watch YouTube videos, etc., although I think you'll find that the simplest and fastest way to obtain an answer for any question is to simply read through the course materials. When you

present material to the teaching staff for evaluation, you are essentially saying, "This is my best understanding of how to solve these problems; am I doing this correctly?" Submitting work that is not your own is a waste of the teaching staff's time, but more importantly it's a waste of the learning opportunity we're offering you.

This approach to formative assessments is unique to CSCI E-5A, and I've never seen another large-scale STEM course use this method. It's an important feature of the class, and I think you'll find that it will enable you to engage more deeply with the material.

3 Problem Set Regrades

In CSCI E-5A, we allow you to resubmit your problem sets for regrading. The principles of how we organize this process are simple, but it's good to work through the details.

There are a total of 16 grading sessions for CSCI E-5A, every Monday from January 24 to May 9. Each grading session has a "gate", and once the gate closes you can't submit your work for that grading session. All gates for problem set submissions close at 11 PM EDT.

Each problem set is eligible for submission for three specific consecutive grading sessions. For instance, for Problem Set 0, we have:

- The gate for the first grading session for Problem Set 0 closes on Monday, January 24, at 11 PM EDT.
- The gate for the second grading session for Problem Set 0 closes on Monday, January 31, at 11 PM EDT.
- The gate for the third and final grading session for Problem Set 0 closes on Monday, February 7, at 11 PM.

Problem Set 1 also has three grading sessions, but these start on the week after the start of Problem Set 0:

- The gate for the first grading session for Problem Set 1 closes on Monday, January 31, at 11 PM.
- The gate for the second grading session for Problem Set 1 closes on Monday, February 7, at 11 PM.
- The gate for the third grading session for Problem Set 1 closes on Monday, September 20February 14, at 11 PM.

Problem Set 2 also has three grading sessions, and they start a week after the start of Problem Set 1:

- The gate for the first grading session for Problem Set 2 will close on Monday, February 7, at 11 PM.
- The gate for the second grading session for Problem Set 2 will close on Monday, February 14, at 11 PM.

- The gate for the third grading session for Problem Set 2 will close on Monday, February 21, at 11 PM.

Thus, the problem sets have a staggered set of grading dates.

This basic pattern generates the schedule for grading:

- On Monday, January 24, only Problem Set 0 (first grading session) can be submitted.
- On Monday, January 31, both Problem Set 0 (second grading session) and Problem Set 1 (first grading session) can be submitted.
- On Monday, February 7, you can submit Problem Set 0 (third grading session), Problem Set 1 (second grading session), and Problem Set 2 (first grading session). Note that after this grading session, Problem Set 0 will no longer be eligible for submission.
- For the fourth grading session, on Monday, February 14, you can submit Problem Set 1 (third grading session), Problem Set 2 (second grading session), and Problem Set 3 (first grading session). Note that after this grading session, Problem Set 1 will no longer be eligible for submission.

We continue in this manner for the rest of the semester.

If you don't submit a problem set for a grading session, there is no penalty in the sense that we will subtract points from your score. However, you forfeit that opportunity to have your work evaluated, and you can't get it back, so you do lose something. Notice here that we're **not** promising that you'll always have 3 grading opportunities for a problem set, regardless of when you submit it. No! Instead, in order to have 3 opportunities for the staff to review your work you must submit your assignments according to the schedule, and if you miss a session it's gone. Since we use a 0-1 grading system and you don't get credit for a problem unless it's perfect, many people find that they need all 3 grading sessions to resolve any issues. Thus, missing a grading session is a genuine loss, and you should avoid this if at all possible.

If you haven't finished all the problems before a grading session, that's unfortunate, but you should still submit whatever you've done so we can review it and provide you with feedback. Really, if you've done any work on the problem set at all, there's no reason for you to not send this in for the staff to examine.

This is a simple and rational system, but once we get past the first few grading sessions it's easy to get lost. Quick – what's due on Monday, February 28? Hey, I have no idea, and I'm the person who designed the system! I admit – the details can be complicated. So, the teaching staff has created two schedules for you:

- The first schedule lists all the problem sets, along with their associated submission dates.
- The second schedule lists all the submission dates, along with their associated problem sets.

Even better is the CSCI E-5A Assignment Submission Cheatsheet, and this lists all the submission dates in a one-page table. In fact, you can pretty much forget all the details that

we've worked and just refer to the Cheatsheet, and you should be fine. Finally, we'll also make regular announcements about the upcoming grading session.

There's a lot of information here, and we recommend that you take a few minutes to look over the schedules and make sure that you understand how they operate.

4 Summative Assessments

There are two summative assessments in CSCI E-5A:

- The Midterm Assessment, which will be released on Monday, March 7 at 5 PM, and is due on Monday, March 14 at 11 PM.
- The Comprehensive Assessment, which will be released on Monday, May 2 at 5 PM, and is due on Monday, May 9 at 11 PM.

The summative assessments are essentially extended take-home exams. They are not proctored, and I don't ask you to download and install spyware like Proctorio. You can spend as much time as you want on the exam, as long as you submit it by the deadline.

We are indifferent about the resources that you use when working on formative assessments, but we are very particular about summative assessments. All your work on these exams must be your own, and you cannot receive assistance from anyone else, either in the class or outside of it.

The regrade policy applies only to problem sets, and not to summative assessments. For these, you have to get it right the first time! However, summative assessments are not graded using the 0-1 scoring system, and we'll award partial credit if you get part of a problem right and another part wrong.

5 Calculating Your Final Grade

To calculate the final grade, the scores for the problem sets, midterm assessment, and comprehensive course assessment are first standardized to a range of 0 to 100. Once these scores have been standardized, I calculate two preliminary scores, which are weighted averages:

Component	Preliminary Score 1	Preliminary Score 2
Problem Sets	20%	
Midterm Assessment	30%	35%
Comprehensive Course Assessment	50%	65%

Note that under Preliminary Score 1 80% of your final grade is based on your performance on the Midterm and Comprehensive Course Assessments, while under Preliminary Score 2 the percentage rises to 100%. You must be comfortable with this form of high-stakes testing in order to take CSCI E-5A.

Next, I define the graduate course score to be the maximum of the two preliminary scores. Thus, if you do really well on the two high-stakes assessments, then your Preliminary Score 2 will be high and you'll get a high overall score for the course, regardless of how much homework you do. On the other hand, if you do all the problems, you'll get a high homework score, and with Preliminary Score 1 this will provide you with some room for error on the high-stakes assessments. For graduate students, the graduate course score is their final numerical score for the whole semester, but for undergraduates I multiply the graduate course by 4/3 to obtain the final numerical score.

Finally, to assign your letter grade, I use a standard grading table:

Range	Letter Grade
93 ≤ Score	A
90 ≤ Score < 93	A-
87 ≤ Score < 90	B+
83 ≤ Score < 87	B
80 ≤ Score < 83	B-
77 ≤ Score < 80	C+
73 ≤ Score < 77	C
70 ≤ Score < 73	C-
67 ≤ Score < 70	D+
60 ≤ Score < 67	D
Score < 60	E

There is no scaling or curving for letter grades. If everyone scores 95 for the semester, then everyone gets an A, and if everyone scores 55 for the semester, then everyone gets an E.

6 SUMMARY

It's unusual for the statement of assessment policy to take up so many pages, but in practice the course has a very simple structure:

- Every Monday from January 24 to May 2, you can submit problem sets according to the schedule that you can find on your CSCI E-5A Grading Schedule Cheatsheet, but remember the gates close at 11 PM!
- On Monday, March 7 at 5 PM, I'll release the Midterm Assessment, and the gate for this assessment closes on Monday, March 14 at 11 PM.
- On Monday, May 2, at 5 PM, I'll release the Comprehensive Assessment, and the gate for this assessment closes on Monday, May 9 at 11 PM.

I realize this all sounds a little scary, especially with the high-stakes testing and the lack of any scaling. However, in practice most students do well, and if you work hard on the problem sets and take advantage of the regrade opportunities you should find that the assessments are actually fairly straightforward.

7 Problem Set Schedule

Problem Set 0: Course Orientation

- Problem Set 0 will be released on Monday, January 10, at 11 PM.
- The gate for the first submission closes on Monday, January 24, at 11 PM.
- The gate for the second submission closes on Monday, January 31, at 11 PM.
- The gate for the third submission closes on Monday, February 7, at 11 PM.

Assignment	Submission	Date
Problem Set 0	First	Monday, January 24
Problem Set 0	Second	Monday, January 31
Problem Set 0	Third	Monday, February 7

Problem Set 1: Base R Graphics

- Problem Set 1 will be released on Monday, January 24, at 11 PM.
- The gate for the first submission closes on Monday, January 31, at 11 PM.
- The gate for the second submission closes on Monday, February 7, at 11 PM.
- The gate for the third submission closes on Monday, February 14, at 11 PM.

Assignment	Submission	Date
Problem Set 1	First	Monday, January 31
Problem Set 1	Second	Monday, February 7
Problem Set 1	Third	Monday, February 14

Problem Set 2: Numeric Values

- Problem Set 2 will be released on Monday, January 31, at 11 PM.
- The gate for the first submission closes on Monday, February 7, at 11 PM.
- The gate for the second submission closes on Monday, February 14, at 11 PM.
- The gate for the third submission closes on Monday, February 21, at 11 PM.

Assignment	Submission	Date
Problem Set 2	First	Monday, February 7
Problem Set 2	Second	Monday, February 14
Problem Set 2	Third	Monday, February 21

Problem Set 3: Vectors

- Problem Set 3 will be released on Monday, February 7, at 11 PM.
- The gate for the first submission closes on Monday, February 14, at 11 PM.
- The gate for the second submission closes on Monday, February 21, at 11 PM.
- The gate for the third submission closes on Monday, February 28, at 11 PM.

Assignment	Submission	Date
Problem Set 3	First	Monday, February 14
Problem Set 3	Second	Monday, February 21
Problem Set 3	Third	Monday, February 28

Problem Set 4: Iteration

- Problem Set 4 will be released on Monday, February 14, at 11 PM.
- The gate for the first submission closes on Monday, February 21, at 11 PM.
- The gate for the second submission closes on Monday, February 28, at 11 PM.
- The gate for the third submission closes on Monday, March 1, at 11 PM.

Assignment	Submission	Date
Problem Set 4	First	Monday, February 21
Problem Set 4	Second	Monday, February 28
Problem Set 4	Third	Monday, March 7

Problem Set 5: Logical Values

- Problem Set 5 will be released on Monday, February 21, at 11 PM.
- The gate for the first submission closes on Monday, February 28, at 11 PM.
- The gate for the second submission closes on Monday, March 7, at 11 PM.
- The gate for the third submission closes on Monday, March 21, at 11 PM.

Assignment	Submission	Date

Problem Set 5	First	Monday, February 28
Problem Set 5	Second	Monday, March 7
Problem Set 5	Third	Monday, March 21

Problem Set 6: Categorical Data

- Problem Set 6 will be released on Monday, February 28, at 11 PM.
- The gate for the first submission closes on Monday, March 7, at 11 PM.
- The gate for the second submission closes on Monday, March 21, at 11 PM.
- The gate for the third submission closes on Monday, March 28, at 11 PM.

Assignment	Submission	Date
Problem Set 6	First	Monday, March 7
Problem Set 6	Second	Monday, March 21
Problem Set 6	Third	Monday, March 28

Midterm Assessment

- The Midterm Assessment will be released on Monday, March 7, at 5 PM.
- The gate for the only submission closes on Monday, March 14, at 11 PM.

Assignment	Submission	Date
Midterm Assessment	Only	Monday, March 14

Problem Set 7: Functions and Strings

- Problem Set 7 will be released on Monday, March 21, at 11 PM.
- The gate for the first submission closes on Monday, March 28, at 11 PM.
- The gate for the second submission closes on Monday, April 4, at 11 PM.
- The gate for the third submission closes on Monday, April 11, at 11 PM.

Assignment	Submission	Date
Problem Set 7	First	Monday, March 28
Problem Set 7	Second	Monday, April 4
Problem Set 7	Third	Monday, April 11

Problem Set 8: Data Frames

- Problem Set 8 will be released on Monday, March 28, at 11 PM.
- The gate for the first submission closes on Monday, April 4, at 11 PM.
- The gate for the second submission closes on Monday, April 11, at 11 PM.
- The gate for the third submission closes on Monday, April 18, at 11 PM.

Assignment	Submission	Date
Problem Set 8	First	Monday, April 4
Problem Set 8	Second	Monday, April 11
Problem Set 8	Third	Monday, April 18

Problem Set 9: Managing Data

- Problem Set 9 will be released on Monday, April 4, at 11 PM.
- The gate for the first submission closes on Monday, April 11, at 11 PM.
- The gate for the second submission closes on Monday, April 18, at 11 PM.
- The gate for the third submission closes on Monday, April 25, at 11 PM.

Assignment	Submission	Date
Problem Set 9	First	Monday, April 11
Problem Set 9	Second	Monday, April 18
Problem Set 9	Third	Monday, April 25

Problem Set 10: Summarizing Data

- Problem Set 8 will be released on Monday, April 11, at 11 PM.
- The gate for the first submission closes on Monday, April 18, at 11 PM.
- The gate for the second submission closes on Monday, April 25, at 11 PM.
- The gate for the third submission closes on Monday, May 2, at 11 PM.

Assignment	Submission	Date
Problem Set 10	First	Monday, April 18
Problem Set 10	Second	Monday, April 25
Problem Set 10	Third	Monday, May 2

Comprehensive Assessment

- The Comprehensive Assessment will be released on Monday, May 2, at 6 PM.
- The gate for the only submission closes on Monday, May 9, at 11 PM.

Assignment	Submission	Date
Comprehensive Assessment	Only	Monday, May 9

8 GRADING SESSION SCHEDULE

Monday, January 24

- First submission for Problem Set 0

Date	Assignment	Submission
Monday, January 24	Problem Set 0	First

Monday, January 31

- Second submission for Problem Set 0
- First submission for Problem Set 1

Date	Assignment	Submission
Monday, January 31	Problem Set 0	Second
Monday, January 31	Problem Set 1	First

Monday, February 7

- Third and final submission for Problem Set 0
- Second submission for Problem Set 1
- First submission for Problem Set 2

Date	Assignment	Submission
Monday, February 7	Problem Set 0	Third
Monday, February 7	Problem Set 1	Second
Monday, February 7	Problem Set 2	First

Monday, February 14

- Third and final submission for Problem Set 1
- Second submission for Problem Set 2
- First submission for Problem Set 3

Date	Assignment	Submission
Monday, February 14	Problem Set 1	Third
Monday, February 14	Problem Set 2	Second
Monday, February 14	Problem Set 3	First

Monday, February 21

- Third and final submission for Problem Set 2
- Second submission for Problem Set 3
- First submission for Problem Set 4

Date	Assignment	Submission
Monday, February 21	Problem Set 2	Third
Monday, February 21	Problem Set 3	Second
Monday, February 21	Problem Set 4	First

Monday, February 28

- Third and final submission for Problem Set 3
- Second submission for Problem Set 4
- First submission for Problem Set 5

Date	Assignment	Submission
Monday, February 28	Problem Set 3	Third
Monday, February 28	Problem Set 4	Second
Monday, February 28	Problem Set 5	First

Monday, March 7

- Third and final submission for Problem Set 4
- Second submission for Problem Set 5
- First submission for Problem Set 6

Date	Assignment	Submission
Monday, March 7	Problem Set 4	Third
Monday, March 7	Problem Set 5	Second
Monday, March 7	Problem Set 6	First

Monday, March 14

- Only submission for Midterm Exam

Date	Assignment	Submission
Monday, March 14	Midterm Exam	Only

Monday, March 21

- Third and final submission for Problem Set 5
- Second submission for Problem Set 6

Date	Assignment	Submission
Monday, March 21	Problem Set 5	Third
Monday, March 21	Problem Set 6	Second

Monday, March 28

- Third and final submission for Problem Set 6
- First submission for Problem Set 7

Date	Assignment	Submission
Monday, March 28	Problem Set 6	Third
Monday, March 28	Problem Set 7	First

Monday, April 4

- Second submission for Problem Set 7
- First submission for Problem Set 8

Date	Assignment	Submission
Monday, April 4	Problem Set 7	Second
Monday, April 4	Problem Set 8	First

Monday, April 11

- Third and final submission for Problem Set 7
- Second submission for Problem Set 8
- First submission for Problem Set 9

Date	Assignment	Submission
Monday, April 11	Problem Set 7	Third
Monday, April 11	Problem Set 8	Second
Monday, April 11	Problem Set 9	First

Monday, April 18

- Third and final submission for Problem Set 8
- Second submission for Problem Set 9
- First submission for Problem Set 10

Date	Assignment	Submission
Monday, April 18	Problem Set 8	Third
Monday, April 18	Problem Set 9	Second
Monday, April 18	Problem Set 10	First

Monday, April 25

- Third and final submission for Problem Set 9
- Second submission for Problem Set 10

Date	Assignment	Submission
Monday, April 25	Problem Set 9	Third
Monday, April 25	Problem Set 10	Second

Monday, May 2

- Third and final submission for Problem Set 10

Date	Assignment	Submission
Monday, May 2	Problem Set 10	Third

Monday, May 9

- Only submission for the Comprehensive Assessment

Date	Assignment	Submission
Monday, May 9	Comprehensive Assessment	Only