Honesty Policy on Take home Exams

All work on this exam that you submit under your name should be solely the results of your efforts. If you copy someone else's work and put your name on it, you are being dishonest. Anything that appears with your name must reflect nerve impulses that originated from your brain. I expect and require honesty from all my students. The penalty for dishonesty in class is automatic failure and a report to the Dean of Students Office.

Please read, sign, and date the statement below, and return with your exam paper. **Your exam will not be graded unless this statement accompanies the exam.**

I have read and understand the policies regarding academic honesty as related to this course and the University. By signing this statement below, I affirm that I have neither sought nor received help from anyone in the completion of this examination and that the solutions presented here are solely the result of my efforts.

Signature: Date: February 15, 2019

Printed name: Kathryn Atherton

Part A. (50 points) Please provide the following for the attached article (see below).

1. Extract and clearly present the critical argument from the article in premise/conclusion format.
2. Analyze the critical argument using course concepts (HOS, etc.) to provide an assessment of the strength of the conclusion/argument.

Note: You may use other sources of information, i.e. internet, published articles, etc. to obtain background knowledge to better understand the article. However, you may not use other peoples' analysis/critical arguments to develop solutions (see honesty statement).

Harvard admissions lawsuit is a threat to America's diversity and strength
Ray Mabus, Opinion contributor
USA Today Published 3:15 a.m. ET Oct. 15, 2018

Questions about the value of diversity will be very visibly on the line this week in a case against Harvard's admissions policy brought by legal activist Edward Blum, who has frequently challenged civil rights measures and race-conscious admissions. It would be bad for students and the nation if this lawsuit succeeded. It would strip the freedom and flexibility that Harvard — and other universities — need to create the diverse learning environment that benefits all students, and it would leave these students less equipped to make a difference in the world.

I have some perspective on this topic. As secretary of the Navy for almost eight years, my focus was to maintain and advance our Navy and Marine Corps as the most effective fighting force the world has ever known. To do that required drawing from the widest possible talent pool with the broadest range of life experiences. And here I found one clear truth: The more diverse a group is, the stronger it is.

This is true for all organizations, but it's especially true for the military. A military force that looks too much alike, thinks too much alike and acts too much alike becomes predictable. And a predictable force is a defeatable force. This is not diversity for diversity's sake, and it's not about political correctness. This is about having people from varied backgrounds and experiences who approach issues and challenges from many different viewpoints. We learn from difference.

A diverse military is a stronger military

The Harvard case is specifically about how the university handles Asian-American admissions, but the larger issue should not get lost. What's at stake in the national debate and this lawsuit is the exposure to the diverse environments that best prepares women and men for careers in the military and beyond. I've seen firsthand that a commitment to diversity strengthens organizations, people and our nation.

During my tenure, we opened submarine and riverine service to women; pushed for and then implemented the repeal of "don't ask; don't tell"; and made ground combat roles open to women (the last place women were excluded in the Navy and Marines). We returned Naval Reserve Officers Training Corps to Harvard, Yale, Princeton and Columbia after an absence of 40 years and established NROTC units at Rutgers and Arizona State Universities, two of the nation's more diverse campuses. We increased

the percentage of women at the Naval Academy from 17 percent to nearly 30 percent, and worked to allow transgender individuals to serve openly.

Every time the military has included different types of people, starting with integrating the armed forces after World War II, proponents of the status quo — those who want a homogeneous military — have used exactly the same old and sometimes ugly arguments against the move. They have said that it would weaken unit cohesion or create morale and recruiting problems. Or they just called it "social engineering."

Every time, these arguments were wrong. And every time the force has become more diverse, it has become stronger and more effective. Diversity has made the military better at the missions the country has given it.

Especially important is that while we know what the missions of today are, no one knows what we will face tomorrow. We must have a military not wedded to any one way of thinking so that it can meet whatever challenges come over the horizon.

One of the basic infantry combat tests that Marines use is to be able to get over an 8-foot wall. When men go through this test, individuals who can't get over keep trying on their own until they finally make it or give up. When women were being tested for ground combat in 2015 and the first woman through couldn't make it over the wall, all the other women banded together and helped each other until all got over.

Learn the right diversity lessons from history

This is not only a great example of thinking about a challenge in a different way, it is also the very ethos of the Marines: Improvise, adapt, overcome.

I had the honor of naming a Navy ship for Harvey Milk, the gay rights activist who proved his courage again and again. Early in his life, Milk was a Navy diver, one of the toughest jobs there is. He was kicked out of the Navy when it was discovered that he was gay. How much weaker was our Navy, how much weaker was our nation, when we did not have the services of patriots like Milk and so many others, simply because they were somehow different?

And that's the core question here. Will we weaken America's colleges and universities — and in turn the nation and institutions where graduates go on to work and serve? Or will we learn the right lessons from history and continue to chart a path toward more diverse and inclusive institutions? In the end, for me, the answer is always the same: More diversity equals greater strength.

Premises:

1. Diverse groups have people from different backgrounds and experiences.
2. People from different backgrounds approach issues and challenges from different viewpoints.
3. Differences allow people to learn.
4. Learning from differences equips people to make a difference in the world.

5. Including different types of people in the armed forces has made it stronger and more effective.
6. A strong and effective military is better at facing the missions given by the country.
7. Future missions of the country are unknown.
8. Learning from differences allows the military to adapt to unknown missions and challenges.
9. Adapting to unknown missions and challenges makes the military stronger.
10. A diverse group of people is not predictable by others.
11. An unpredictable military is less able to be defeated.
12. A military that is less able to be defeated is stronger.
13. Excluding people from a group because they are different weakens the group.

14. Race-conscious admissions policies admit diverse groups of students to universities.
15. Diverse groups of students create a diverse learning environment.
16. A lack of diverse learning environments at universities is bad for students and the nation.
17. The lawsuit against Harvard's race-conscious admissions challenges the presence of diverse learning environments at universities.
18. (*Lawsuits that are bad for the nation should not succeed.*)

Conclusion: The lawsuit against Harvard's race-conscious admissions policy should not succeed.

Analysis:

- The argument contains two parallel arguments, one about the role of diversity in universities (premises 10 – 13) and another about the role of diversity in the military, specifically in the Navy (premises 5 – 9). The two arguments are somewhat connected via the initial set of premises (1 – 4) that describe the benefits of diversity in general. However, the argument about diversity in the military is not well-connected to the conclusion that the lawsuit challenging diversity in universities should not succeed with the premises given.
- There are several heaps of sand used ("make a difference", "stronger and more effective", "bad for students and the nation") which weaken the argument.
- Several premises are subjective given the information in the article (i.e. premises 4, 5, 17).
- Other premises are inductive, from the author's experience, and might not necessarily be true for all cases (premises 8, 13).

Part B (50 points) Synthesize a critical argument for the following:

Many of you are probably interested in getting a job or acceptance into a post-graduate educational institution (e.g. law school, graduate school, medical school, etc.) and know of several specific target companies/institutions. Select an actual company/institution for whom you would like to work and develop a valid, sound (strong, persuasive) critical argument why this company/institution should hire/admit you, in formal critical argument format, i.e:

Premise 1
Premise 2
Etc.

Conclusion:
Therefore, [company name] should hire [your name] for a [type of position, e.g. engineering, sales, etc.] in [division or area of interest, e.g. foods F&D, pharmaceutical research, product quality control, etc.].

Evaluation will be in 4 areas:

- Soundness of premises (accuracy of premises)
- Validity of argument logic (logical structure)
- Strength of the argument (i.e. how compelling the conclusion is)
- Spelling/grammar/wording

Your argument should be concisely and clearly presented such that the logic/soundness, as defined in class, can be easily evaluated. Your spelling and grammar should be correct and conform to standard English language rules.

Since you are very familiar with the characteristics/traits of the subject (you), **it is expected that all your premises are to be sound, as defined in class, and clearly and appropriately presented**. You may supply a resume/vita and any additional material needed to verify the soundness of your premises. You may wish to consider the target audience and what knowledge about them is needed in your argument. If corporate information is used in your premises, please supply a corporate annual report, website, or other information, as needed, to explain the soundness of your premises. Also, it would be good to recognize that this is generally a competitive issue.

Please provide your solutions in printed (typed) hard copy in class and via electronic submission (additional materials should be appended or referenced).

Premises:

Section I – Requirements to be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student

1. To be admitted to Purdue University as a PhD student, one must have a bachelor's degree from a college or university of recognized standing.
2. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must have a grade point average of at least 3.0 on a 4.0 scale.
3. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must have a background in mathematics, biology, and chemistry, including organic chemistry.
4. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must be academically strong.

5. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must have previous research experience.
6. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must be able to work in teams.
7. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must enjoy solving problems.
8. To be admitted to Purdue University's Interdisciplinary Life Sciences Graduate Program as a PhD student, one must be one of the top 30 of at least 100 applicants.
9. Extracurricular activities are considered for admission as a PhD student to Purdue University's Interdisciplinary Life Sciences Graduate Program.

Section II – About Purdue University's undergraduate Agricultural and Biological Engineering program

10. Purdue University is accredited by the Accreditation Board for Engineering and Technology, Incorporated (ABET).
11. Accreditation by ABET qualifies a university as being recognized as having educational programs with defined standards of quality.
12. The first student outcome of the ABET Accreditation standards is that engineering students must be able to identify, formulate, and solve complex engineering problems.
13. Purdue University's undergraduate Agricultural and Biological Engineering curriculum includes classes in calculus I – III, linear algebra and differential equations, and partial differential equations (mathematics); biology of the living cell and biotechnology laboratories (biology); and general chemistry and organic chemistry (chemistry).
14. Purdue University's undergraduate Agricultural and Biological Engineering curriculum includes classes in which students must work in teams including First Year Engineering I and II, Biotechnology Laboratory I and II, Thermodynamics of Biological Systems I, Bioprocess Engineering Laboratory, and Senior Design I and II.
15. Purdue University's grading system uses a 4.0 scale for grade point averages.
16. Purdue University's undergraduate Agricultural and Biological Engineering program has been ranked as the best undergraduate Agricultural and Biological Engineering program in the country by U.S. News and World Report for eight consecutive years as of September 2018.
17. (*Students who have a grade point average of at least 3.0 out of 4.0 in the best program in the country are academically strong* – implied premise)

Section III – About Kathryn Atherton's undergraduate experience and qualifications

18. Kathryn Atherton is an undergraduate senior in Agricultural and Biological Engineering at Purdue University.
19. Kathryn Atherton will receive a bachelor's degree in May 2019 from Purdue University.
20. Kathryn Atherton has a grade point average of 3.31.
21. Kathryn Atherton is an Honors College student.
22. Honors College students must take extra classes and/or work with their professors to make some of their coursework more challenging than the normal coursework.
23. Students who take extra classes or make their coursework more challenging and have a grade point average of at least 3.0 out of 4.0 are academically strong.
24. Kathryn Atherton has received seven different merit-based scholarships during her time at Purdue University.
25. The recipients of merit-based scholarships are academically strong.
26. Kathryn Atherton has had experience in two summer research projects, one in bioinformatics and one in synthetic biology, and another in-class research experience with which she received an award for her poster presentation.
27. Kathryn Atherton's research projects have given her diverse experiences and skills.

28. Kathryn Atherton has worked on a team in her synthetic biology research experience as well as in her classes and extra curriculars.
29. Kathryn Atherton has enjoyed solving problems in her Agricultural and Biological Engineering coursework.
30. Kathryn Atherton has skills in laboratory techniques, written and oral communications, and computer programming.
31. Skills in laboratory techniques, communications, and computer programming are necessary for interdisciplinary life science students and professionals.
32. Kathryn Atherton has a minor in Spanish.
33. Spanish is a subject in the liberal arts.
34. Students with education in multiple areas, including STEM (science, technology, engineering, and mathematics) and liberal arts have a diverse skill set.
35. Kathryn Atherton has leadership experience from various leadership positions for her extra curriculars.
36. Students with various leadership experiences have a diverse set of skills.
37. Diverse skill sets are necessary for working in an interdisciplinary field.
38. Students with skills that are necessary for interdisciplinary life sciences are strong applicants for the Interdisciplinary Life Sciences Graduate program at Purdue University.
39. Strong applicants are ranked at or near the top of the list of applicants.

Conclusion: Therefore, Purdue University should admit Kathryn Atherton to the Interdisciplinary Life Sciences Graduate program as a Ph.D. student.

Basic Graduate Program Requirements:
"Requirements and application deadlines vary depending on the program. … Furthermore, it is important to recognize that although satisfaction of these basic requirements does not guarantee graduate admission, failure to satisfy these requirements may lead to automatic denial of admission.
Graduate admission is granted to a specific department and for a specific campus. Applicants are ordinarily expected to hold a bachelor's degree from a college or university of recognized standing prior to registration and should have achieved a grade point average of 3.0 on a 4.0 scale, or higher. Three-year Bologna bachelor's degree recipients are eligible for admission."
-- https://www.purdue.edu/gradschool/prospective/gradrequirements/index.html

Interdisciplinary Life Sciences Graduate Program-Specific Requirements
"Doctoral Degree Program Requirements:

- Undergraduate Cumulative Grade Point Average: 3.0 or equivalent"

-- https://www.purdue.edu/gradschool/prospective/gradrequirements/westlafayette/puls.html

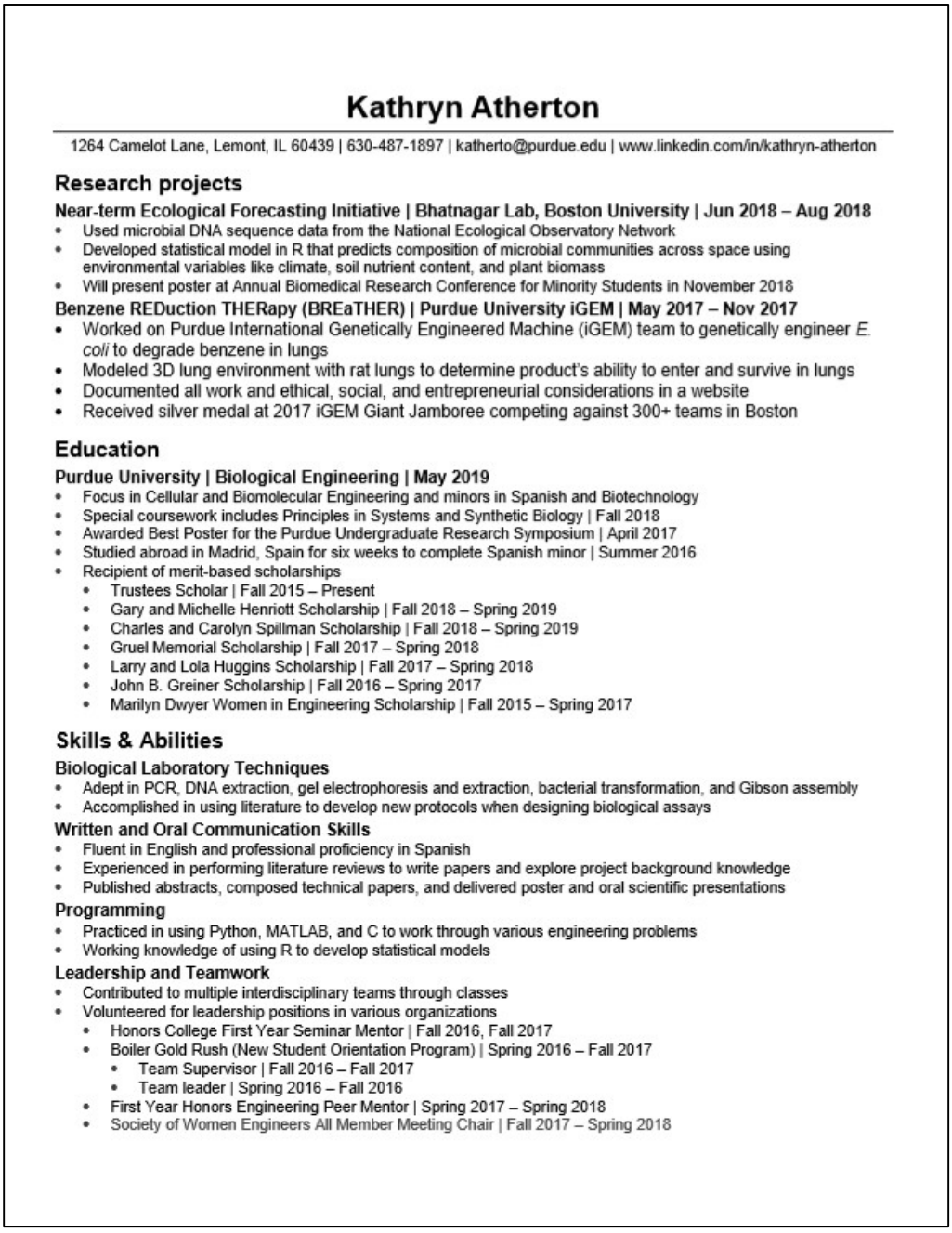
Additional Information:
"PULSe is a Life Sciences graduate program. Thus, we expect that successful applicants have the necessary background in mathematics, biology, and chemistry including organic chemistry and ideally biochemistry. Certain Training Groups such as Biomolecular Structure and Biophysics and Integrative Neuroscience also suggest that students have a background in basic physics. Exceptions may be made, however, for students who are changing fields, for example, when moving from computer science or engineering into the life sciences. Use your personal statement to explain your reasons for wanting to do interdisciplinary life science research and provide details of your experiences."
-- https://www.purdue.edu/gradschool/pulse/admission.html

Frequently Asked Questions:
"What is the Admissions Committee looking for in a successful application?

A successful application comes from an academically strong student with previous research experience documented by letters of recommendation. We are looking for motivated students who are eager to solve problems and work well in teams.

Do you consider extra-curricular activities in the evaluation process?
We consider all required application materials when making admissions decisions
.
How many seats are available in PULSe each year?
Each fall, we enroll approximately 30 students."
-- https://www.purdue.edu/gradschool/pulse/faq/admissions.html

Kathryn Atherton's resume:



Kathryn Atherton

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Research projects

Near-term Ecological Forecasting Initiative | Bhatnagar Lab, Boston University | Jun 2018 – Aug 2018
- Used microbial DNA sequence data from the National Ecological Observatory Network
- Developed statistical model in R that predicts composition of microbial communities across space using environmental variables like climate, soil nutrient content, and plant biomass
- Will present poster at Annual Biomedical Research Conference for Minority Students in November 2018

Benzene REDuction THERapy (BREaTHER) | Purdue University iGEM | May 2017 – Nov 2017
- Worked on Purdue International Genetically Engineered Machine (iGEM) team to genetically engineer *E. coli* to degrade benzene in lungs
- Modeled 3D lung environment with rat lungs to determine product's ability to enter and survive in lungs
- Documented all work and ethical, social, and entrepreneurial considerations in a website
- Received silver medal at 2017 iGEM Giant Jamboree competing against 300+ teams in Boston

Education

Purdue University | Biological Engineering | May 2019
- Focus in Cellular and Biomolecular Engineering and minors in Spanish and Biotechnology
- Special coursework includes Principles in Systems and Synthetic Biology | Fall 2018
- Awarded Best Poster for the Purdue Undergraduate Research Symposium | April 2017
- Studied abroad in Madrid, Spain for six weeks to complete Spanish minor | Summer 2016
- Recipient of merit-based scholarships
  - Trustees Scholar | Fall 2015 – Present
  - Gary and Michelle Henriott Scholarship | Fall 2018 – Spring 2019
  - Charles and Carolyn Spillman Scholarship | Fall 2018 – Spring 2019
  - Gruel Memorial Scholarship | Fall 2017 – Spring 2018
  - Larry and Lola Huggins Scholarship | Fall 2017 – Spring 2018
  - John B. Greiner Scholarship | Fall 2016 – Spring 2017
  - Marilyn Dwyer Women in Engineering Scholarship | Fall 2015 – Spring 2017

Skills & Abilities

Biological Laboratory Techniques
- Adept in PCR, DNA extraction, gel electrophoresis and extraction, bacterial transformation, and Gibson assembly
- Accomplished in using literature to develop new protocols when designing biological assays

Written and Oral Communication Skills
- Fluent in English and professional proficiency in Spanish
- Experienced in performing literature reviews to write papers and explore project background knowledge
- Published abstracts, composed technical papers, and delivered poster and oral scientific presentations

Programming
- Practiced in using Python, MATLAB, and C to work through various engineering problems
- Working knowledge of using R to develop statistical models

Leadership and Teamwork
- Contributed to multiple interdisciplinary teams through classes
- Volunteered for leadership positions in various organizations
  - Honors College First Year Seminar Mentor | Fall 2016, Fall 2017
  - Boiler Gold Rush (New Student Orientation Program) | Spring 2016 – Fall 2017
    - Team Supervisor | Fall 2016 – Fall 2017
    - Team leader | Spring 2016 – Fall 2016
  - First Year Honors Engineering Peer Mentor | Spring 2017 – Spring 2018
  - Society of Women Engineers All Member Meeting Chair | Fall 2017 – Spring 2018