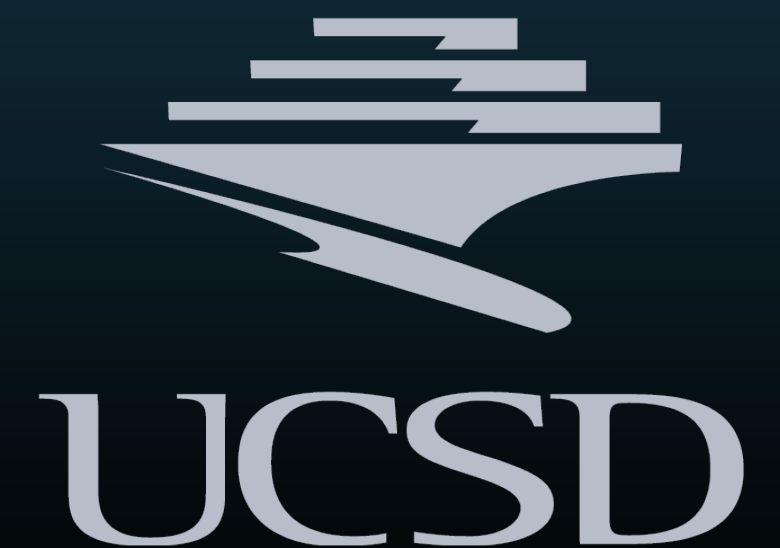


JAVIER DUARTE  
A3D3 KICKOFF MEETING  
NOVEMBER 9, 2021

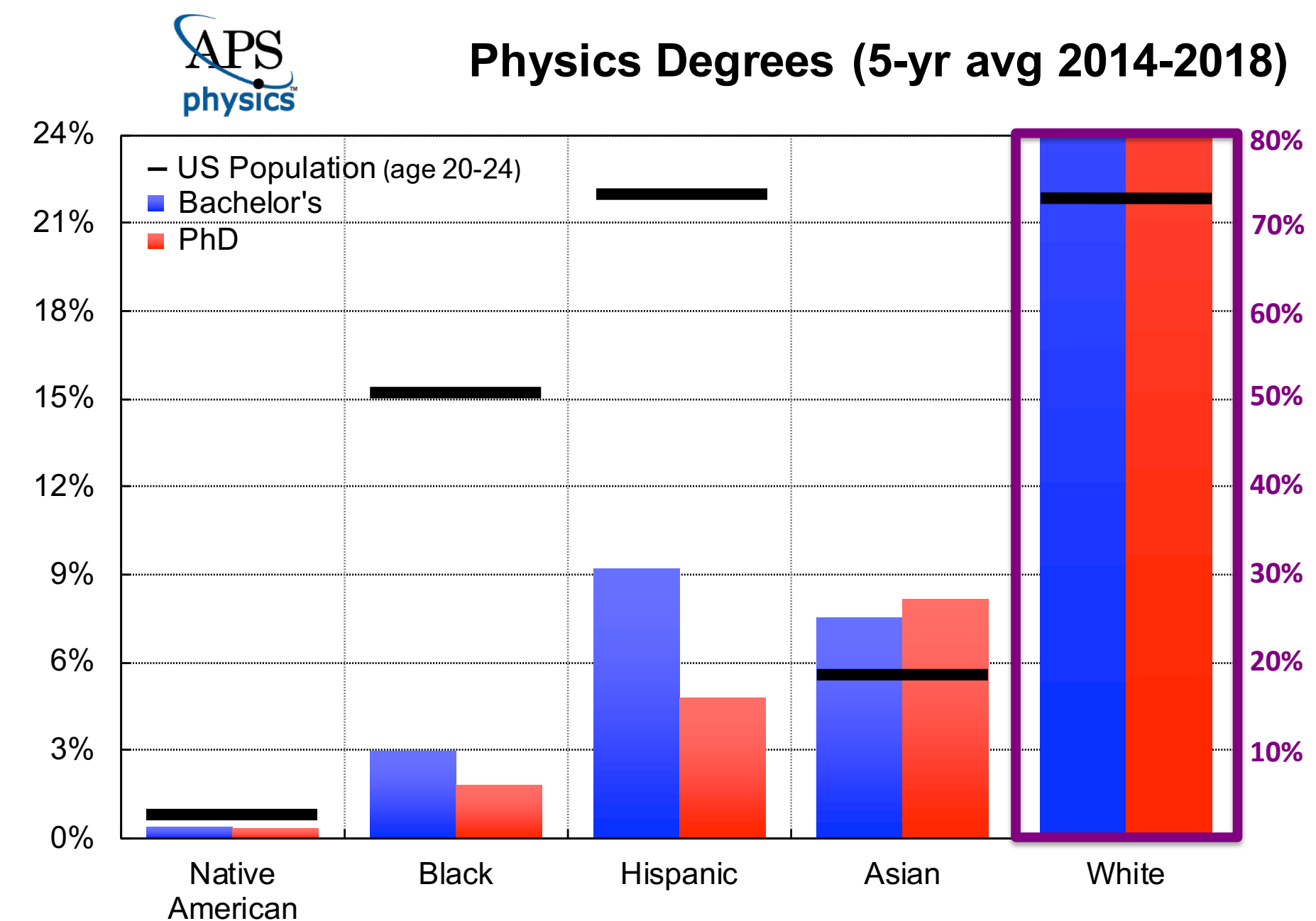
---

# RUBRICS FOR A3D3



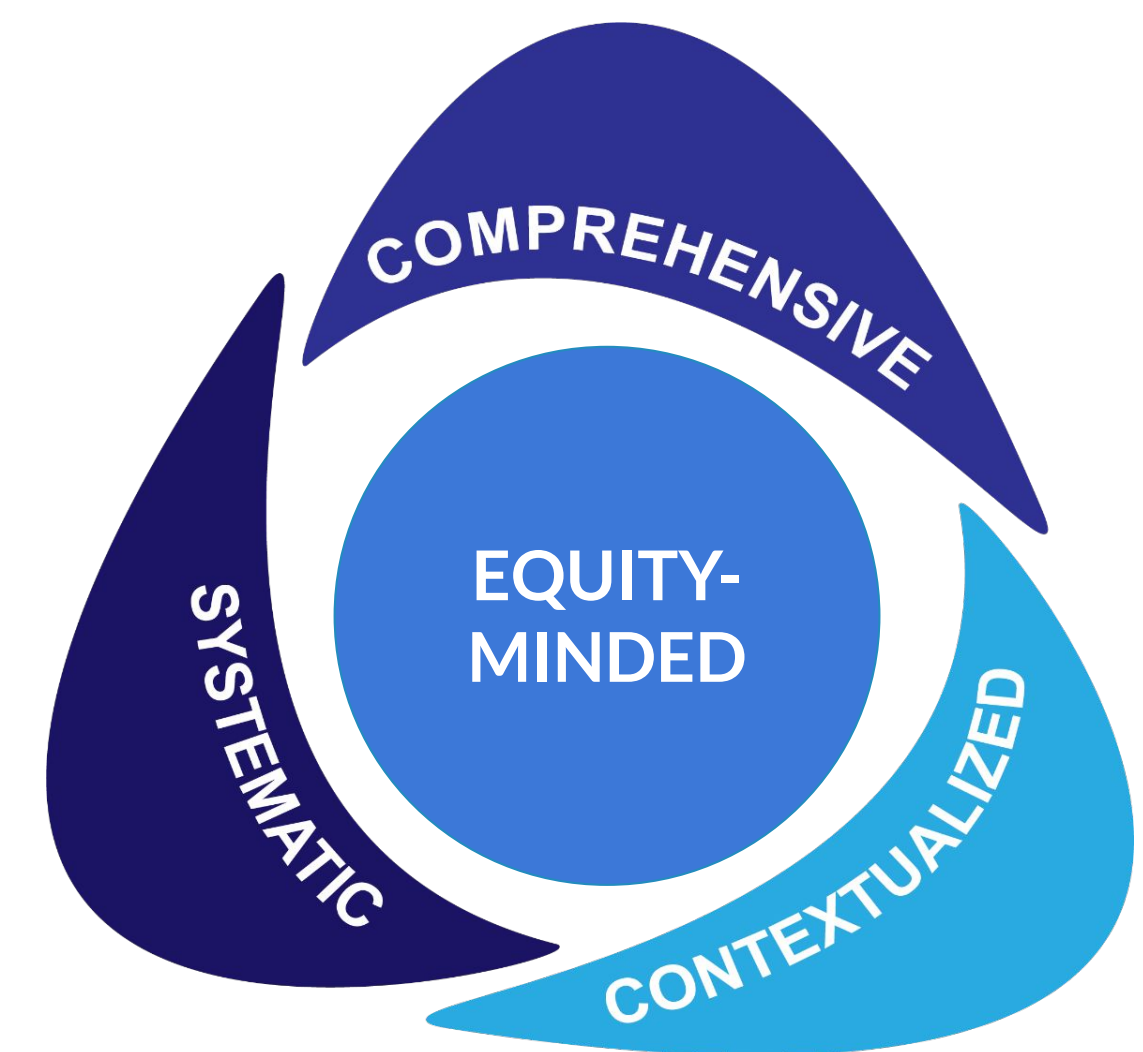
# WHY WE SHOULD CARE ABOUT DIVERSITY?

- ▶ Practical benefits of diverse teams in academia/industry
  - ▶ Better problem solving (Phillips et al. 2008, [doi:10.1177/0146167208328062](https://doi.org/10.1177/0146167208328062); Page 2007, [doi:10.2307/j.ctt7sp9c](https://doi.org/10.2307/j.ctt7sp9c))
  - ▶ Better ideas (De Vaan, Veredes, & Stark 2011; Burt 2004)
  - ▶ Research cited more: Freeman & Huang 2014
- ▶ If we are not able to admit and recruit URM students and women we are, by definition, not getting the best, most qualified students
- ▶ Beyond, that I think we have a moral imperative to uplift URM students



Source: IPEDS, US Census, and APS

- ▶ Holistic review: consideration of a variety of variables when evaluating a candidate for admission into a graduate degree program, including academic, nonacademic, and contextual factors in the review process with the goal of identifying students who are most likely to succeed in our program
  - ▶ Framework that is **comprehensive** (numerous criteria related to achievements, competencies, and potential), **contextualized** (metrics, achievements, and alignment with your program), **systematic** (review to ensure efficiency, minimize bias, and improve transparency and accountability), **equity-minded** (attuned to equity implications of choices)
- ▶ Consideration of non-cognitive competencies: (Measurable) social and emotional skills that we use to navigate life
  - ▶ Predict academic/job performance
  - ▶ Few, if any, group differences by gender and race
  - ▶ Orthogonal to cognitive measures (e.g., GPA, GRE, etc.)



## Self Management

Optimism  
Trustworthiness  
Achievement Orientation  
Conscientiousness  
Adaptability  
Emotional Self-Control  
Initiative

## Relationship Management

Teamwork and Collaboration  
Communication  
Building Bonds  
Conflict Management  
Influence  
Change Catalyst  
Inspirational Leadership  
Developing Others

## Self Awareness

Self-Confidence  
Accurate Self-Assessment  
Emotional Awareness

## Social Awareness

Cultural Awareness  
Organizational Awareness  
Empathy  
Service Orientation

- ▶ Assumptions about risk are often inaccurate
- ▶ Faculty are overconfident in their ability to predict who will be successful. (Highhouse, 2008, [doi:10.1111/j.1754-9434.2008.00058.x](https://doi.org/10.1111/j.1754-9434.2008.00058.x))
- ▶ It's difficult to reliably predict Ph.D. completion for populations who rarely enroll (i.e., problem of small N)
  - ▶ An explicit bias favoring conventional achievement.
- ▶ But most students leave for non-academic reason (Lovitts & Nelson, 2000, [doi:10.12691/education-3-10-19](https://doi.org/10.12691/education-3-10-19))
- ▶ Student outcomes result from what they bring AND from the educational experience & climate we provide
  - ▶ Many of the assumptions about merit, excellence, and intelligence that faculty hold are gendered and racialized
- ▶ Typical physics Ph.D. admissions criteria [e.g. GRE] limit access to underrepresented groups but fail to predict doctoral completion: "GRE Physics and GRE Verbal were not significant in... predicting Ph.D. completion." (Miller et al., 2020, [doi:10.1126/sciadv.aat7550](https://doi.org/10.1126/sciadv.aat7550))



- ▶ Syverson, Franks, Hiss (2018), [nacacnet.org/globalassets/documents/publications/research/defining-access-report-2018.pdf](https://nacacnet.org/globalassets/documents/publications/research/defining-access-report-2018.pdf), "...adoption of a well-executed test-optional [undergraduate] admission policy can lead to an increase in overall applications as well as an increase in the representation of URM students" and low-income students, with similar degree completion rates.
- ▶ Grabowski, 2017, [doi:10.1007/s10459-017-9807-9](https://doi.org/10.1007/s10459-017-9807-9): "Using mission-driven, holistic admissions criteria comprised of applicant attributes and experiences in addition to academic metrics resulted in a more diverse interview pool than using academic metrics alone."
- ▶ Bastedo et al., 2018, [doi:10.1080/00221546.2018.1442633](https://doi.org/10.1080/00221546.2018.1442633): "... admissions officers with a 'whole context' view of holistic review were disproportionately likely to admit a low socioeconomic-status applicant."
- ▶ Barceló et al., 2021, [doi:10.1007/s40596-020-01327-5](https://doi.org/10.1007/s40596-020-01327-5): "Relative to Traditional, Holistic Review significantly increased the odds of URM applicant selection for interview... Assigning value to lived experience and de-emphasizing [exam] scores contributed to the significant changes in odds ratio of interview selection for URM applicants... holistic screening represents a structural intervention capable of critically examining measures of merit, reducing bias, and increasing URM representation..."
- ▶ Young et al., 2021, [arXiv:2110.04329](https://arxiv.org/abs/2110.04329): Study of MSU physics graduate admissions "... showed that faculty ratings of applicant's grades, research experiences, and noncognitive abilities do not differ based on the applicant's sex or undergraduate background. The differences we did observe in faculty ratings could be explained as observing known systematic issues in physics regarding test scores and service work expectations... we recommend that departments use rubric-based holistic review for their graduate admissions process."

- ▶ “Two measures of lived experience were included as binary outcomes, each with its own rubric: Resilience (achievement in enduring adversity—e.g. personal setback, illness, discrimination) and Distance Travelled (trajectory relative to family or community-level barriers reflecting marginalization at a population or structural level—e.g. first-generation college graduate, raised in community with high poverty/low educational resources).
- ▶ “Self-identified race/ethnicity was not provided to reviewers as part of ERAS application material, and race/ethnicity was not explicitly considered in any Holistic Review domain nor was it sufficient to earn de facto recognition for Resilience or Distance Travelled.”

---

Major Domains:

- Leadership
- Community
- Research
- Clinical
- Reference Letters

1. Each Major domain divided across 4 tiers of increasing excellence.
2. Tiers defined according to multiple considerations including the duration, intensity, role, and impact of the experience.

Professionalism

1. Professionalism was divided across 3 tiers of performance/behavior - consideration given to instances of “unprofessional behavior” as well as to professionalism “above the expected level” of medical student trainee.

Resilience and Distance Traveled

1. Divided across 2 tiers
2. Consideration to applicants life experience including achievement despite personal hardship or structural barriers.

Holistic Review (HR) Composite Score

1. Preliminary composite score with weighted preference to Clinical domain and “unprofessional” behavior with negative value.
  2. Resilience and Distance Traveled with multiplicative (1.1–1.2 or 110–120%) contribution = HR Composite Score.
-

# RUBRICS RECOMMENDATIONS FROM C-CIDE

- ▶ High, Medium, and Low: roughly one third of applicants in each category
  - ▶ Concrete definitions will lead to more consistent judgments
  - ▶ Conjunctions can be helpful, e.g. High = A and B and C; Med = B and (A or C); Low = A or B or C or None
- ▶ Create space for comments to justify assessments; allow for noting unique situations that merit special consideration
- ▶ If items have different weightings, fix the weight ahead of review

| Category                                   | High  | Medium   | Low  | Notes |
|--|---|--|--|-------|
| Academic Preparation                       | A- or better in all core STEM courses AND B or better in non-STEM courses; received at least one academic honor | B or better in all core STEM courses; Concerning grades have a reasonable explanation                          | Lower than a B in 2 or more core STEM courses; Grades of C or lower do not have a reasonable explanation                     |       |
| Scholarly potential                        | Clear commitment to and enthusiasm for research AND experience at least equal to a senior thesis                | Clear commitment to and enthusiasm for research, BUT experience less than a senior thesis                      | Signals that a PhD is more of a next step than a clear passion.  |       |
| Diversity, Equity, Inclusion Contributions | Has been an active advocate for diversity, equity, and/or inclusion   | Some evidence of engagement with diversity, equity, and/or inclusion   | Limited evidence of engagement with diversity, equity, and/or inclusion  |       |
| Alignment with Program                     | Research interests align with multiple faculty AND stated career goals align with program training              | Research interests align with one faculty member AND stated career goals align with program training           | Limited alignment with faculty research interests OR limited evidence of alignment between career goals and program training |       |
| Realistic Self-Appraisal                   | Clearly delineates strengths and weaknesses <b>AND</b> clear evidence of effort on self development             | Basic statements about strengths and weaknesses <b>AND</b> does seek positive and negative feedback            | Over or understates abilities; indications that self-assessment or learning from experiences are limited                     |       |
| Preference for long-term goals             | Clearly communicates long-range goals beyond the PhD <b>AND</b> has a record of engaging in long-term endeavors | Clearly communicates long-range goals beyond the PhD <b>OR</b> Has a record of engaging in long-term endeavors | Goals are short range (e.g., specific coursework); limited history of engagement in long-term projects                       |       |



## ▶ Other programs using rubrics:

### ▶ Chemistry & Biochemistry

### ▶ Mathematics

### ▶ Astronomy

#### Department of Mathematics Graduate Admissions Evaluation Rubric

| Category/Rating | 9-10   | 8-9  | 7-8  | 6  | 5  |
|-----------------|--|--|--|--|--|
| Letters         | Strongest recommendation   | Good Recommendation  | Recommendation has potential reservations  | Recommendation with clear reservations   | Missing letters  |
| Grades          | 4.0 or close GPA<br>Straight A student   | GPA above 3.5<br>Straight A student with few exceptions  | GPA below 3.5<br>Mixed Grades – most As and Bs,  | Low GPA<br>Mediocre and/or Failing grades  | Missing or consistently failing grades   |
| Test Scores     | High Subject GRE<br>High Toefl/IELTS   | High Subject GRE<br>High Toefl/IELTS   | Average Subject GRE<br>Average Toefl/IELTS   | Low Subject GRE<br>Low Toefl/IELTS   | Missing Test Scores  |
| Other           | Diversity<br>Statement of Purpose<br>Research<br>Graduate Work<br>Leadership<br>Interest in UCSD | Diversity<br>Statement of Purpose<br>Research<br>Graduate Work<br>Leadership<br>Interest in UCSD | Diversity<br>Statement of Purpose<br>Research<br>Graduate Work<br>Leadership<br>Interest in UCSD | Diversity<br>Statement of Purpose<br>Research<br>Graduate Work<br>Leadership<br>Interest in UCSD | Missing documents<br>Inappropriate content<br>Disciplinary actions<br>Academic integrity<br>Unverified documents |

|   |  |  |  |   |
|---|--|--|--|---|
| Academic Preparation  | STEM grades (pick one)   | All A-'s or higher   | 3  |   |
|   |  | All A's and B's  | 2  |   |
|   |  | 1 or 2 C's   | 1  |   |
|   |  | Mostly B's and C's   | 0  |   |
|   | non-STEM grades (pick one)   | All B's or higher  | 1  |   |
|   |  | 1 or 2 C's   | 0.5  |   |
|   | improvement in academic performance (choose all applicable)  | Mostly B's and C's   | 0  |   |
|   |  | improvement in academic performance  | 0.5  |   |
|   | Letters (choose one)   | Reasonable explanation for an extremely low grade (D or F)   | 0.5  |   |
|   |  | Letter writer(s) indicate high intellectual ability and personal details of candidate  | 2  |   |
| Letter writer(s) are generally positive about intellectual ability of candidate, but not glowing  |  | 1  |  |   |
| Research Potential  | research enthusiasm (choose one)   | No comment from letter writers on intellectual ability of candidate  | 0  |   |
|   |  | candidate communicates commitment to and enthusiasm for research   | 1  |   |
|   | graduate school expectations (choose one)  | candidate lacks enthusiasm for research  | 0  |   |
|   |  | candidate has reasonable expectations of what to expect in graduate schools  | 1  |   |
|   | Letters (choose one)   | candidate indicates they view a PhD as a box to check or a way to delay going into the job market  | 0  |   |
|   |  | letter from research advisor/supervisor has personal details of candidate and includes glowing recommendation about candidate's research skills        | 3  |   |
|   |  | letter from research advisor/supervisor has personal details of candidate and is generally positive about candidate's research abilities               | 2  |   |
|   |  | letter from research advisor/supervisor lacks personal details about candidate/ is overly general  | 1  |   |
|   | Research Experience  | Statement of Purpose (choose one)  | letter from research advisor/supervisor is missing or has red flags  | 0 |
|   |  |  | Statement of purpose clearly shows a strong understanding of candidate's undergraduate/MS/industry research project(s)   | 2 |
| Statement of purpose shows a decent understanding of candidate's undergraduate/MS/industry research project(s)                                      |  |  | 1.5  |   |
| statement of purpose is coherent but lacks a deep understanding of "big picture" goals of candidate's undergraduate/MS/industry research project(s) |  |  | 0.5  |   |
| poster/oral presentations (choose one)  |  | statement of purpose is incoherent or does not mention research experience   | 0  |   |
|   |  | candidate has poster or oral presentation(s) at a large conference   | 1  |   |
|   |  | candidate has poster or oral presentation(s) only at school/local event  | 0.5  |   |
| publications (choose one)   |  | no poster or oral presentations  | 0  |   |
|   |  | first author publication   | 2  |   |
|   |  | name on publication  | 1  |   |
|   | name on publication in review (candidate and letter writer agree on this) or senior thesis                       | 0.5  |  |   |
| length of research exp (choose one)   | not enough experience from any one lab to have a story   | 0  |  |   |
|   | over 1 year experience in the same lab, with significant body of work done                                       | 2  |  |   |
|   | If candidate attended an undergraduate university without a rigorous research program, candidate sought out REUs | 2  |  |   |
|   | candidate has >6 months exp in the same lab  | 1  |  |   |
| Personal qualities/EDI contributions  | overcoming hardships (choose one)  | student has history of moving around from one lab to another (no consistency)  | 0  |   |
|   |  | candidate has overcome extreme hardships/barriers  | 2  |   |
|   |  | candidate describes personal experiences of overcoming some hardships/barriers   | 1  |   |
|   | leadership experience/EDI contributions (choose one)   | no mention of overcoming barriers  | 0  |   |
|   |  | candidate has been an advocate for EDI, with leadership exp (leadership exp can be associated with EDI)  | 1  |   |
|   |  | candidate has been involved in EDI activities or has leadership exp (leadership exp can be non-EDI-related)  | 0.5  |   |
|   | other (choose one)   | no mention of EDI/ no leadership exp   | 0  |   |
|   |  | candidate describes a significant (i.e. long-term commitment) extracurricular other than what's listed above (e.g. student-athlete, non-glamorous job) | 1  |   |
|   | Alignment with Program   | Number of faculty members interested in (choose one)   | candidate does not describe any extracurriculars in their personal statement, and has not filled out any of the "additional educational experiences" questions | 0 |
|   |  |  | research interests align with multiple faculty   | 1 |
| research interests align with only one faculty  |  |  | 0.5  |   |
| knowledge of faculty research programs (choose one)   |  | research interests have little/no overlap with our department  | 0  |   |
|   | personal statement specifies details about research programs of faculty in our department                        | 1  |  |   |
|   |  | no details about research programs of faculty (i.e. just list of names)  | 0  |   |

UC Berkeley Astronomy Department

This rubric will be used during the second round of application reviews for the 2021 Cycle.

| Criterion                              | 3 (best score)  | 2 (medium score)   | 1 (worst score)  |
|--|---|--|--|
| Academic foundation in (astro)physics  | High grades (As, high Bs) in past physics and astronomy classes<br><br>Taken all of the necessary prerequisites for graduate study<br><br>Specific comments from letter writers about physics expertise | Medium-high or high grades (B- and up; one or two C's) in past physics and astronomy classes<br><br>Taken most or all of the necessary prerequisites for graduate study                                    | Low grades (Cs, Ds, Fs) in past physics and astronomy classes<br><br>Missing many of the necessary prerequisites for graduate study  |
| Creativity                             | Evidence of coming up with their own ideas.<br><br>Specific comments from letter writers about performance in classes and research.   | Some evidence of coming up with their own ideas.   | No evidence of coming up with their own ideas.<br><br>No evidence of student participation in office hours or science conversations with letter writers.   |
| Ability to explain research in context | Research is clearly described in essays.  | Research description is moderately clear.<br><br><i>(Students without formal research experience can be assessed based on their description of science topics covered in class and/or research goals.)</i> | Research described poorly or incorrectly.<br><br><i>(Students without formal research experience can be assessed based on their description of science topics covered in class and/or research goals.)</i> |
| Curiosity                              | Evidence of seeking out answers in classes and projects.<br><br>Interesting questions raised in essays.<br><br>Specific comments from letter writers about curiosity.                                   | Some evidence of seeking out answers in classes and projects.<br><br>Hints of interesting questions in essays.   | No evidence of curiosity in classes or research.<br><br>No evidence of student participation in office hours or science conversations with letter writers.   |

|   |   |   |   |
|---|---|---|---|
| Perseverance & resilience               | Evidence of completing projects.<br><br>Has overcome obstacles to achieve success.  | Evidence of making progress on projects.<br><br>Has overcome minor obstacles to success.  | Lack of project completion or multiple failed projects, even if no obstacles were discussed.  |
| Initiative                              | Took full advantage of available opportunities.<br><br>Evidence of going the extra mile to surpass expectations.  | Took some advantage of available opportunities.<br><br>Sometimes put in extra effort on assignments and projects.   | Did not take advantage of opportunities.<br><br>Did the bare minimum or less.   |
| Technical skills                        | Demonstrated knowledge of strong coding, observing, or instrumentation skills.  | Some knowledge of coding, observing, or instrumentation.  | No demonstrated knowledge of coding, observing, or instrumentation.   |
| Leadership, independence, & reliability | Past history of effective leadership in projects, work, or extracurriculars.<br><br>Evidence of ability to meet deadlines and complete assigned tasks without constant supervision. | Past history of participation in projects, work, or extracurriculars.<br><br>Evidence of ability to meet deadlines and complete assigned tasks with moderate supervision. | Little history of participation in projects, work, or extracurriculars.<br><br>Little or no evidence of ability to meet deadlines and complete assigned tasks even with moderate supervision. |

**Example Illinois Physics grad admissions rubric:** The goal of rubrics is to evaluate applicant qualities that many faculty feel are important for students to be successful in research

| Competency              | High   | Medium   | Low   |
|-------------------------|--|--|---|
| Emotional Self-Control  | Maturity and clarity of purpose. Deep understanding of the process of improvement. | Works well with others. Volunteers.                                  | Friction. Vacillation                           |
| Adaptability            | Overcomes or finds way around obstacles  | Sustains a course with minimal guidance                              | Not adept with change. Gets stuck / distracted. |
| Achievement Orientation | Clear leadership. Persistence. Dedication and stamina. High creativity.            | Comes prepared. Can research independently or with minimal guidance. | Low motivation. Needs competition to work hard. |
| Initiative              | Comes up with new ideas. Nudges advisor.   | Asks relevant questions/ intellectually curious. Interactive.        | Does not make good progress. Needs nudging.     |
| Optimism                | Appreciates and even enjoys the process.   | Takes the good with the bad.   | Does not seek new challenges.                   |
| Trustworthiness         | Given more and more responsibilities. Careful and meticulous.                      | Fulfilled responsibilities   | Did not fulfill responsibilities                |
| Conscientiousness       | Does work beyond expectations.   | Hard worker.   | Unprepared. Not a hard worker.                  |



- ▶ Norming: Committee members independently rate the same two applications, then discuss their scores, focusing on differences
  - ▶ Extremely important!
- ▶ Have each application reviewed by 2 people; Discuss if there is significant divergence in the ratings; Bring in 3rd reviewer if needed
- ▶ Plan how to evaluate unexpected cases; revise rubric annually
- ▶ By setting rubric up beforehand we can reduce implicit / cognitive bias (or just going along with the rubric)
- ▶ This is more likely to succeed if we all
  - ▶ Understand how it can benefit us and our program
  - ▶ Participate in its development as a group
  - ▶ Feel competent in using it
- ▶ Study the impact of any new method



- ▶ My proposal (work in progress): <https://docs.google.com/spreadsheets/d/1SBJz13AXyP2tMjs2LfuZlg7iBNwSINwTD3o53mwMyx8/edit?usp=sharing>

- ▶ UCSD Graduate Division Holistic Admissions: <https://collab.ucsd.edu/display/GDCP/Holistic+Admissions>
- ▶ Worksop: [https://collab.ucsd.edu/pages/viewpage.action?pageld=114917429&preview=/114917429/114917430/Posselt\\_Miller\\_%20Fundamentals%20Workshop\\_Sloan\\_11.30.2020.pdf](https://collab.ucsd.edu/pages/viewpage.action?pageld=114917429&preview=/114917429/114917430/Posselt_Miller_%20Fundamentals%20Workshop_Sloan_11.30.2020.pdf)
- ▶ Strategies for Holistic Review, <https://collab.ucsd.edu/display/GDCP/Holistic+Admissions?preview=/97850328/110555216/EXCERPTS%20FROM%20C-CIDE%20-%20UCSD%20Strategies%20for%20Holistic%20Review%20Slides.pdf>
- ▶ Kent, J.D. and McCarthy, M.T. (2016). Holistic Review in Graduate Admissions: A Report from the Council of Graduate Schools. Washington, DC: Council of Graduate Schools, [https://cgsnet.org/ckfinder/userfiles/files/CGS\\_HolisticReview\\_final\\_web.pdf](https://cgsnet.org/ckfinder/userfiles/files/CGS_HolisticReview_final_web.pdf)
- ▶ Posselt, J. R. (2016). Inside graduate admissions. Harvard University Press.