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## Infographic: Institutional Barriers to Black and Latino Male Collegians' Success in Engineering and Related STEM Fields

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# Institutional Barriers to Black and Latino Male Collegians' Success in Engineering and Related STEM Fields\*

For Blacks and Latinos who are accepted into engineering and related STEM fields, they face a number of barriers to their success which lead to low retention and graduation rates



Participants included **27** Black and **22** Latino male collegians majoring in engineering and related STEM fields, whose ages ranged from 18 to 24 years

## 4 Major institutional barriers

- 1 Inadequate academic advising
- 2 Limited course offerings
- 3 Poor quality teaching
- 4 Insufficient financial aid

### Student quotes

1 "So, as far as her advising me, I don't think she did a great job because she would allow me to sign up for classes that I wasn't necessarily, I wouldn't say prepared for, but didn't have the requirements."

Charles, a Black senior aerospace engineering major



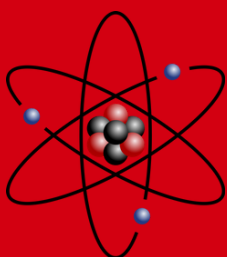
2 "I had to take calculus first time here so learning derivatives and all that stuff on a quarter system was a bit difficult."

Homer, a Black senior electrical engineering major



3 "There is a difference just going, giving lectures, and giving you theory, there is a difference between that and actually applying that theory to solve problems."

Carlos, a Latino and senior math major



4 "A lot of people split their junior year but I didn't have money to split junior year and go a fifth year. I would've, junior year was the biggest challenge because I had to stack all of those aero classes on top of each other."

Charles, a Black senior aerospace engineering major



## Recommendations

1 Add metrics to the tenure and promotion process for faculty mentoring of Black and Latino students so that more faculty help with academic advising in engineering and related STEM majors



2 Consider offering more transparent and diverse options for students to transfer credit hours from other institutions like community colleges or online programs



3 Change engineering and STEM graduate programs so students have mandatory education classes involving pedagogy and students gain experience teaching with a faculty member who has a record of high-quality teaching



4 Create endowments and scholarships for students from historically underrepresented racial/ethnic groups who have unmet financial needs as well as provide financial incentives for more students to work with faculty on research projects, curriculum updates, and outreach projects in engineering and related STEM fields



### \*Note

This study is part of a larger, longitudinal study titled, *Investigating the Critical Junctures: Strategies that Broaden Minority Participation in STEM Fields*, funded by the National Science Foundation (NSF)



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