



## Research Information & Application Packet

Please note **ONLY ONLINE APPLICATIONS WILL BE ACCEPTED.** This application is being provided so that you can prepare and draft your responses before submitting them online.



### *Program Sponsors*



## UCB-HBCU Program 2018 Summer Research Program

**Program Overview:** The UCB-HBCU Program promotes research and education connections between faculty in the Physical Electronics and Optical Engineering area at UC Berkeley and Historically Black Colleges and Universities (HBCUs). The goal of this project is to increase the enrollment of African-American graduates from the HBCU partners to engineering and physical science doctoral programs at UC Berkeley or other UC campuses.

**The UCB-HBCU Program is a collaboration of nine UCB faculty from 4 research centers:**



### **Center for Integrated Access Networks (CIAN)**

**Mission:** Create integrated optoelectronic technologies for access aggregation and data centers to overcome bottlenecks.

-Constance Chang-Hasnain

-Ming C. Wu

<http://www.cian-erc.org/>



### **Center for Energy Efficient Electronics Science (E³S)**

**Mission:** Make fundamental and conceptual breakthroughs in the underlying physics, chemistry, and materials science of electronic systems to reduce energy consumption in electronic devices.

-Jeffrey Bokor

-Constance Chang-Hasnain

-Ali Javey

-Tsu-Jae King Liu

-Sayeef Salahuddin

-Ming C. Wu

-Eli Yablonovitch

<http://www.e3s-center.org/>



### **Nanomanufacturing Systems for Mobile Computing and Mobile Energy Technologies (NASCENT)**

**Mission:** To create high-throughput, reliable and versatile nanomanufacturing systems and processes that will revolutionize future generations of mobile computing and energy devices.

-Ana Claudia Arias

-Ali Javey

-Vivek Subramanian

<http://nascent-erc.org/>



### **Translational Applications of Nanoscale Multiferroic Systems (TANMS)**

**Mission:** Develop a fundamentally new approach to couple electricity and magnetism with nanoscale multiferroic elements to increase energy efficiency, reduce physical size, and increase power output in electronic devices.

-Jeffrey Bokor

-Sayeef Salahuddin

<http://www.tanms-erc.org/>

## **UCB-HBCU Program** **2018 Summer Research Program**

### **Testimonials from students who have participated in UCB-HBCU Program:**

*The Summer Research Program surpassed my expectations. I did not expect that the program would address my career development as much as it did. However, all of the seminars were so helpful in informing me about the graduate school application process and that was a great surprise.*

*I learned so much including how to deal with people, conduct research, write scientific papers, and how to become a better presenter.*

*I gained an excellent network of people who have truly mentored me throughout the summer and helped me learn so much. I have greatly benefited from the E3S staff's guidance and I look forward to working with them in the future as I do research at my home institution and as I apply to graduate school. I also appreciated the opportunity to meet faculty mentors and grad students who were willing to give me advice on the graduate school experience and my research.*

*It met my expectations in every way. I enjoyed the experience*

*Online Applications, Transcripts, & Recommendation Letters  
must be received by **Thursday, November 30, 2017***

### **I. Program Eligibility**

College students who

- Are sophomores, juniors, and non-graduating seniors enrolled at a Historically Black College and University (HBCU)
- Majoring in engineering or physical science
- Are United States citizens, nationals, or permanent residents
- Have a 3.0 GPA or higher

**Note:** No prior research experience is required. In fact, we especially encourage applications from eligible students who have not conducted research.

### **II. Program Basics**

- Spend nine weeks pursuing independent research *full-time* on a topic related to your major under the one-to-one mentorship of a UC Berkeley faculty member.
  - Attend a Research Orientation to prepare you for your work
  - Receive on-going support from your faculty mentor and research program staff to successfully complete your work
  - At the end of the summer you will deliver an oral PowerPoint and Poster presentation on your research in a closing symposium and submit a 2-page report of your work
  - Receive a Certificate of Program Completion
- Receive free housing and meals on the UC Berkeley campus. The UCB-HBCU Program will also cover transportation costs to and from UC Berkeley (up to \$600).
- Receive a summer stipend of \$4,000.

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- Meet and share your experience with research students like yourself from universities across the country including through planned social events.
- Attend seminars on preparing for science and engineering careers and applying to graduate school.
- Option of taking a subsidized GRE prep course, depending on your academic year.
- Receive an academic year stipend of \$1,200 (eligibility for this will be based on your academic year, and doing research at your home institution upon your return from the UCB-HBCU Program).

### **III. Program Benefits**

- You will be able to truly familiarize yourself with issues related to your prospective major with the world-class faculty and resources on campus.
- You will be able to speak from authority and experience about your interest in your major for your graduate school application.
- You will develop research skills and abilities that will impress graduate admissions committees, faculty and departments.
- Assuming you do well, you will gain a faculty advocate who can attest to your abilities for graduate school.

### **IV. Dates**

- The UCB-HBCU Program will run from June 7<sup>th</sup> - August 11<sup>th</sup>.

### **V. Frequently Asked Questions**

**Who should I ask for my letters of recommendation?** Recommendations should be from faculty members and mentors. It's important for you to know what a weak letter of recommendation is: a weak letter is one that says you are a good student and nothing else. A strong letter of recommendation will be: this student is great, and then go into detail about why the recommender believes that you are so good based off of your previous interactions. Be sure to let your recommenders know that faculty and graduate students review the applications, so that they can gear their letter towards that audience.

**Do I need research experience to apply?** No! We strongly encourage you to apply regardless of past research experience.

**I have more than one area of interest, should I include them all?** Yes. Provide as much information as you can to aid the UCB-HBCU Program in the selection process. It is also best to be as specific as possible in order to appropriately match you with a faculty mentor.

**I am an international student; can I apply to the UCB-HBCU Program?** No. Unfortunately, we cannot accept international students for our research programs.

**I am planning to graduate in Spring 2018; can I apply to the UCB-HBCU Program?** No. All students must be planning to return to a college or university as an undergraduate in the fall after participating in the UCB-HBCU Program.

**Is this program available for graduate students?** No. The UCB-HBCU Program is only available to undergraduate students.

## **UCB-HBCU Program**

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**What majors will be considered?** Physical science and engineering majors, including but not limited to: chemical engineering, chemistry, electrical engineering, materials science, and physics.

**What research topics are available?** Research topics will be based on the faculty members you choose. Please visit the UCB-HBCU faculty list (<https://e3s-center.berkeley.edu/education/diversity/education/undergraduate/hbcu-reu-summer-research-experience-hbcu-undergraduates/hbcu-research-areas/>) and select the professors you are interested in working with during the summer. Ana Claudia Arias, Jeffrey Bokor, Connie Chang-Hasnain, Ali Javey, Tsu-Jae King Liu, Sayeef Salahuddin, Vivek Subramanian, and Eli Yablonovitch are all affiliated with the UCB-HBCU Program. However, if there is another UC Berkeley faculty member you are interested in working with, please indicate this on your application.

**Who reads the essays?** Faculty, graduate students, and post-docs (all members of the science and engineering community) will be reviewing your essays. The people reviewing your essay may or may not have a degree in your field so it's good to write for a broader audience. Also, it's good to remember that the people reading your application all have a technical background and it is very important to go into detail about your technical interests. The essays should be written to give the reviewers a greater understanding of your academic, personal, and professional qualifications to participate in the UCB-HBCU Program.

**I attend a college or university that is not a HBCU, can I apply to the UCB-HBCU Program?** No. Students must attend a HBCU in order to be eligible for this program.

**How do I apply?** Only ONLINE applications will be accepted. Transcripts and recommendation letters may be emailed, faxed, or mailed to the UCB-HBCU Program office.

**How long before the deadline should things be mailed?** All application materials must be RECEIVED by November 30, 2017. Mail delivery typically will take 5-6 days to reach our offices from across the country, but it can be longer. Please mail your materials far enough in advance to ensure that they are received on-time.

**Where do I send my transcripts?** *By mail:* UCB-HBCU Program, ATTN: Kedrick Perry, Diversity Director, University of California, 562 Sutardja Dai Hall, Berkeley, CA 94720-1764, *by fax:* (510) 664-4467, *by email:* [e3sprogram@e3s-center.org](mailto:e3sprogram@e3s-center.org)

**Can I send in an unofficial transcript?** Yes, unofficial transcripts will be accepted. If admitted, you will be expected to provide an official copy of your transcript.

**How will I know when my application is complete?** You will receive an email notification when all parts of your application have been received.

**What is the application deadline?** Applications are due: November 30, 11:59 P.M. PST. Applications are accepted from end-September until November 30, 2017. It is to your advantage to submit your application early to ensure all requirements arrive in time.

**When are the applications reviewed?** Complete applications will be reviewed as they are turned in. The earlier an application is submitted, the earlier it will be reviewed. There are a very high number of applications received in the last days before the deadline; therefore, it is to the advantage of the student to turn in their application well in advance to ensure all materials are received on time.

**How are research mentors chosen?** Students are matched to a research mentor who does research in the area of the student's interest. On your application, identify UC Berkeley faculty members whose research is of interest to



## **UCB-HBCU Program**

### ***2018 Summer Research Program***

you. If admitted into the UCB- HBCU Program, the admissions committee does its best to place interns in one of their top choices, or in the closest area of research.

**How are research projects chosen?** Projects are chosen for the students based on the interests they list on their applications. We try to match the student's interests to a project that a mentor has for the summer. These projects change yearly and are dependent upon the mentor's needs. If chosen to be a part of a project, the mentee and mentor will work out between them what the project will entail.

**How is placement decided?** We try to match you with your top faculty members and research interests. Therefore it is important to list all faculty members that you are interested in working with, as it makes it easier for you to be placed in a lab.

**When will I find out if I am accepted into the UCB-HBCU Program?** Students are notified of their acceptance into the UCB-HBCU Program by the end of December. Acceptance will be contingent upon Fall 2017 grades to ensure that the minimum GPA is still maintained.

**How long do I have to accept an offer?** Once you are notified of admission into the UCB-HBCU Program, you have one week to accept.

**How long does the UCB-HBCU Program run?** The UCB-HBCU Program is a nine week program. In 2018 it will run from June 7<sup>th</sup> – August 11<sup>th</sup>. Students are expected to participate for the entire duration of the program.

**What if my final exams conflict with the program dates?** Students are required to participate for the entire duration of the program. If your final exams conflict with the program start date, you should arrange to take your exams earlier.

**Can I take classes while participating in the UCB-HBCU Program?** No. UCB-HBCU Program interns cannot take classes while participating in the program because it will negatively affect their research. Interns are expected to spend the majority of their time (40 hours/week) in lab as well as completing their UCB-HBCU deliverables.

**If accepted into the UCB-HBCU Program, does that guarantee admission as a graduate student?** No. All UCB-HBCU interns have an opportunity to interact with a number of UC Berkeley faculty, administrators, and students. However, acceptance into the UCB-HBCU does NOT guarantee admission into graduate school.

**Can I bring a car?** No. Parking is limited on campus and there is no campus overnight parking.

**Is it possible for me to live off campus while I do research?** If accepted into the UCB-HBCU Program you will be required to live in the dorms on campus as this is a residential program.

**Other questions?** Please contact Kedrick Perry at [e3sprograms@e3s-center.org](mailto:e3sprograms@e3s-center.org) or (510) 664-4467.

## **VI. How to Apply?**

### **Application Requirements**

- Completed online application form- **only ONLINE applications will be accepted.**
- Two recommendations from current faculty, mentors, or supervisors in science or engineering

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- Unofficial or official academic transcript from all universities attended

**To apply to the UCB-HBCU Program, follow these steps:**

**Step 1.**

Download or print the Letter of Recommendation Form. Provide your recommenders the form and inform your recommenders their letters must be RECEIVED by our office no later than November 30, 2017 at 11:59 PST. They may send their recommendations via email, fax, or regular mail.

**Step 2.**

Send an *unofficial* copy of your transcript(s) via email, fax, or regular mail. Please note you must send a transcript for *every institution you have attended*. Admitted applicants will be asked to submit an official transcript at the time of acceptance.

**Step 3.**

Application, transcript(s), and letters of recommendations must be received by November 30, 2017. Late and incomplete applications will not be reviewed. Decisions should be emailed by the end of November.

Questions and supporting documents can be addressed to:

UCB-HBCU Program  
ATTN: Kedrick Perry, Diversity Director  
University of California  
562 Sutardja Dai Hall  
Berkeley, CA 94720-1764  
Fax: (510) 664-4467  
Email: [e3sprograms@e3s-center.org](mailto:e3sprograms@e3s-center.org)

**Step 4.**

Complete the on-line application: <https://www.surveymonkey.com/r/2018UCB-HBCU>

**Please note ONLY ONLINE APPLICATIONS SUBMITTED THROUGH SURVEYMONKEY WILL BE ACCEPTED. This application is being provided so that you can prepare and draft your responses before submitting them online.**

**Instructions: (Please Read)**

- ALL applicants should complete sections I -VII and submit transcript(s). (Unofficial transcripts are acceptable)
- Tips for a Successful Application:
  - Be confident that we are eager to read your application; our questions are there to help us get to know you better, not to make you stumble.

- Carefully Read and Follow all instructions. Read through the entire application at least once before filling it out.
- Make sure you save plenty of time to complete the application -- to research what you want to study or research, and in terms of your essay(s) think about what you want to write and then write and revise. All essays should be written/revise at least 2 times and shown to mentors and/or faculty advisors that you trust for feedback.
- Double-check to make sure you have followed all instructions and completed all the Required Sections and provided all the requested documents. Incomplete applications will not be reviewed.
- Answer all questions honestly.



Cell Phone: \_\_\_\_\_ Alternate Phone: \_\_\_\_\_

Highest Education Level of Mother/Parent-Guardian I: Less than High School ☐; High School/GED ☐;



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Some College ☐; AA/AS ☐; BA/BS ☐; Graduate School ☐

Highest Education Level of Father/Parent-Guardian II: Less than High School ☐; High School/GED ☐;  
Some College ☐; AA/AS ☐; BA/BS ☐; Graduate School ☐

**III. Education Background**

Undergraduate Institution: \_\_\_\_\_ Major: \_\_\_\_\_

Cumulative G.P.A.: \_\_\_\_\_ Major GPA: \_\_\_\_\_

Current Academic Level: \_\_\_\_\_ Anticipated graduation date: \_\_\_\_\_

Highest Degree Objective: \_\_\_\_\_

List any educational and/or non-educational honors, awards, scholarships, prizes you have received:

Are you currently receiving, or have you recently received a Pell Grant? Yes ☐ No ☐

Are you a member of one of the following programs: LSAMP, McNair, STARS, or MARC?

Yes ☐ No ☐ If yes, please specify: \_\_\_\_\_

**IV. Research Interests (all sections are required)**

Have you participated in other research programs? Yes ☐ No ☐

If yes, please provide the name(s) of the programs and the institutions that sponsored them:

The UCB- HBCU Program is a partnership between 9 professors across 4 research centers at UC Berkeley. Please visit the UCB-HBCU faculty list (<http://www.e3s-center.org/education/uchbcu/uchbcu-research.htm>) and select the professors you are interest in working with.

- ☐ Ana Claudia Arias
- ☐ Jeffrey Bokor
- ☐ Connie Chang-Hasnain
- ☐ Ali Javey
- ☐ Tsu-Jae King Liu

- ☐ Sayeef Salahuddin
- ☐ Vivek Subramanian
- ☐ Ming Wu
- ☐ Eli Yablonovitch
- ☐ Other: \_\_\_\_\_

UCB-HBCU has summer intern positions available at 4 research centers: CIAN (<http://www.cian-erc.org/>), E<sup>3</sup>S (<http://www.e3s-center.org/>), NASCENT (<http://nascent-erc.org/>), and TANMS (<http://www.tanms-erc.org/>). Please rank the following centers from the most preferable (1) to the least (4)

- \_\_\_\_\_ CIAN
- \_\_\_\_\_ E<sup>3</sup>S
- \_\_\_\_\_ NASCENT
- \_\_\_\_\_ TANMS

Essays:

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- 1) Please explain why you wish to conduct summer research with the faculty you selected and how this relates to your overall interests and goals. Please be specific about your particular area of interest. (Maximum 500 words)
- 2) Please describe a major challenge you have encountered in your life, how you overcame it, and what you learned about yourself and others as a result of the experience. (The experience can be taken from any aspect of your life; it does not need to be related to academics) (Maximum 500 words)
- 3) Describe your reasons for wishing to conduct research this summer and your career goals after graduating from your undergraduate institution. In addition, please identify the contributions you wish to make to your chosen field of study as well as your community. This statement gives the reviewers a greater understanding of your academic, personal, and professional qualifications to participate in the UCB-HBCU Program. (Maximum 500 words)

**V. Letters of Recommendations**

Two letters of recommendation are required. Complete the Letter of Recommendation Forms (pages 12 and 13) and inform your recommenders that their letters must be RECEIVED by Thursday, November 30, 2017, 11:59PM, PST. They may send their recommendations via email, fax or regular mail to the address listed on the Form.

List below the names and contact information of your recommenders whom you will contact for a letter of recommendation.

- |    |      |          |               |
|----|------|----------|---------------|
| 1. |      |          |               |
|    | Name | Position | Email Address |
| 2. |      |          |               |
|    | Name | Position | Email Address |

**VI. Program Expectations**

1. The UCB-HBCU Program will take place for 9 weeks from June 7<sup>th</sup> to August 11<sup>th</sup>. Students accepted into the program will be expected to conduct research full-time, by this we mean a minimum of 40 hours per week. Are there any dates from June 7<sup>th</sup> to August 11<sup>th</sup> when you are not available? Yes ☐ No☐. If yes, please list and explain why this absolutely cannot be avoided.

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2. Are you able and willing to devote a minimum of 40 hours per week on your research project? Yes ☐ No☐.

3. UCB-HBCU Program participants cannot work or be enrolled in courses, including online courses, unless there are extenuating circumstances. Do you plan to work or enroll in courses while you are in the UCB-HBCU Program?  
Yes ☐ No☐. If yes, please explain the circumstances that require you to do this and how you will still be able to devote yourself to intensive research full-time.

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4. All research participants are expected on to live on campus in provided housing during the entire summer program, including weekends, unless there are extenuating circumstances and you receive prior permission. Can

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you live on campus for the entire program? Yes ☐ No ☐. If no, please explain.

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5. Are you applying to any other summer programs? Yes ☐ No ☐. If yes, please list these programs and when you will find out about these opportunities. What program is your first choice?

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6. I understand that as part of the application process applicants may need to speak/meet with prospective faculty mentors and/or UCB-HBCU Program staff. Yes ☐ No ☐

How did you learn about the UCB-HBCU Program? \_\_\_\_\_

The UCB-HBCU Program is affiliated with the Center for Energy Efficient Electronics Science (E3S) and E3S is one of 14 Science and Technology Centers (STC) throughout the country. Some of these centers have similar fields of research as the UCB-HBCU Program, and most offer Summer Research Programs. If your application is not selected for the UCB-HBCU Program, would you like to be considered for a REU position at another STC? Yes ☐ No ☐

**VII. Statement of Verification** (to be read and signed by all applicants)

*I hereby certify to the best of my knowledge that all information submitted on this application and in the attached required documents including essay(s) is accurate, complete and my own work. I also certify that the Transcript(s) accurately reflects my grades.*

*I understand that if I knowingly provide incorrect information, I will, if accepted, be immediately removed from the UCB-HBCU Program (as applicable) and required to reimburse all costs of services provided to me.*

Signature \_\_\_\_\_ Date \_\_\_\_\_

**IS YOUR APPLICATION COMPLETE?**

1. Have you submitted the following application material?

- A. Online application ☐
- B. Provided your recommenders the letter of recommendation form and informed your recommenders that their letters are due by Thursday, November 30, 2017 ☐

2. Have you emailed, faxed, or mailed your transcripts from all universities you have attended?

Yes ☐ No ☐

Completed Applications with required documents must be received by our office on or before November 30, 2017

UCB-HBCU Program  
ATTN: Kedrick Perry, Diversity Director  
University of California  
564 Sutardja Dai Hall  
Berkeley, CA 94720-1764  
Fax: (510) 664-4467

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Email: [kpbperry@berkeley.edu](mailto:kpbperry@berkeley.edu)