

# NSF Webinar for Dear Colleague Letter (NSF 23-115): Advancing Microelectronics Education

## Q&A and Resources

### Questions from the registration survey

#### Answers from Abiodun (Abi) Ilumoka

- What kinds of practices, perspectives, and concepts are in the realm of microelectronics? what prior educational domains does it build on (e.g., CS ed, physical computing, etc.)?
  - A. *Design, manufacture and test of highly complex micro-electronic circuitry integrated on a common substrate using sophisticated software tools. Builds upon basic knowledge of the sciences (Chemistry, Physics) and Math*
- What opportunities to support cooperative education (co-op) will this DCL support?
  - A. *Please follow the guidelines stipulated in the solicitation for the specific funding opportunity you have selected.*
- I am wondering if designing curricula around creating micro-computer-based lab devices is considered relevant.
  - A. *As long as the proposed project address activities relevant to the design, manufacture and test of highly complex micro-electronic circuitry integrated on a common substrate.*
- Is computer architecture education one of the key areas for this effort?
  - A. *As long as the proposed architecture education project includes substantive activities relevant to the design, manufacture and/or test of complex micro-electronic circuitry integrated on a common substrate.*
- I understand NSF is research focused. However, will you be seriously considering a program such as Scholarship for Service where it is a win-win-win for the students, schools (to attract enrollment), and industry & govt (to have skilled workforce continuously ready to serve)?
  - A. *Absolutely! As described in my presentation, the S-STEM program includes funds for activities that support students' success. These funds could be applied to activities such as internships that promote student proficiency in the design, manufacture and/or test of complex micro-electronic integrated circuits.*

- Should proposals be submitted aligning with the DCL according to the same timelines as the other RFPs or would the program directors like them submitted ASAP in the appropriate directorate?
  - A. *Please submit proposals to the selected EDU funding opportunity in compliance with deadline(s) stipulated in the solicitation.*
- Is the focus of the DCL on manufacturing/fabrication aspects of microelectronics? Can a proposal focused only on circuit design aspects be acceptable?
  - A. *DCL covers a wide range of topics on microelectronics, including manufacturing/fabrication and circuit design.*
- As a college access and success program, does it make sense to team up with a college or university or microelectronics employer? And does it make more sense for a college or university to be the lead on a project?
  - A. *Partnerships are encouraged with IHEs and industry. Please follow the guidelines stipulated in the solicitation for the specific funding program you have selected.*

#### Questions answered in the Q&A tool

- Is simultaneous submission to multiple programs encouraged?
  - A. *The proposal content should be substantially different for your submission to different programs.*
- If you already have a supplement, can you get an additional one, for this particular DCL?
  - A. *You can submit it depending on your project's nature and specific circumstances. A justification is needed. Please email your managing PO to discuss this.*
- If I am interested in broadening participation and research in computer architecture, which programs would apply?
  - A. *It depends on your target audience and project goals. If you focus on prek-12 students, you can try ITEST, DRK-12, CS for all, etc. You can try IUSE and other programs if you focus on college students. For informal learning, you can try AISL or ITEST*
- Does S-STEM focus on programs for undergraduate education exclusively?
  - A. *You can find full eligibility criteria here.*  
<https://new.nsf.gov/funding/opportunities/nsf-scholarships-science-technology-engineering>
- Any submission deadline for S-STEM? I might have overlooked.

A. *Here is a link to the S-STEM page with deadlines.*

*<https://new.nsf.gov/funding/opportunities/nsf-scholarships-science-technology-engineering>*

- Does the Robert Noyce Teacher Program support teaching in community colleges?

A. *Noyce funds the development of STEM majors as K-12 teachers. Community colleges may be involved, but the program does not fund the development of instructors at community colleges.*
- In addition to ATE, can we submit through other programs? Anonymous Attendee

A. *Please see Dear Colleague Letter:*  
*<https://www.nsf.gov/pubs/2023/nsf23115/nsf23115.jsp>*
- Please repeat the email address for EAGER questions

A. *[edu\\_chips@nsf.gov](mailto:edu_chips@nsf.gov)*

#### Q&A Questions answered live

- [44:30 & 51:00] If you haven't received an ATE grant before, are you required to go after Track 1?
- [46:00] To what extent does NSF expect to fund purchase of, maintenance of, facilities (such as cleanrooms) for, advanced microelectronics fabrication equipment from, e.g., ASML for student training? This equipment can be very expensive, but industry argues hands-on training is vital.
- [48:00] How closely related to microelectronics do projects need to be to meet this DCL? Are programs aimed at improving education in related STEM fields eligible or must they be specific to microelectronics?
- [50:00] Do proposal topics need to specifically focus on semiconductor devices, or can it broadly focus on microfabrication technologies, including those for MEMS, microfluidics, etc.?
- [51:00] For the ATE program, can we apply for Track 1, track 2, or track 3?
- [51:30] Can we use the funds for education lab instrumentation?
- [53:00] Are non-tenure track faculty encouraged to participate?
- [53:30] Does developing new educational technologies (hardware and software) fall within the scope of this DCL?
- [54:30] Can (retraining) current workforce be the target of a proposal? Or should we focus on students only?
- [56:00] Does development of teaching tools and pedagogy for computer architecture fall within scope of this DCL?
- [57:50] Are You still accepting EAGER proposal related to Advancing Microelectronics Education?

- [58:30] What are the roles of US semiconductor manufacturers such as Intel, GlobalFoundries in such NSF opportunities? Will they be involved in reviewing and guiding the overall effort, so educators are not working in a vacuum?
- [1:00:00] Microfabrication needs technicians managing the sophisticated equipment. Would training of equipment technicians be within the scope of this DCL?
- [1:01:30] Are international collaborations allowed and encouraged?
- [1:03:30] Do development of teaching tools for VLSI, SoC and Embedded systems fall within scope of this DCL?
- [1:04:50] The ATE program is only for two-year Institutions of Higher Education (IHEs), correct?
- [1:06:15] For the ATE program, can we apply for Track 1, track 2, or track 3?

#### Questions and resources from the chat

- ITEST program solicitation video  
<https://stelar.edc.org/events/nsf-webinar-2023-itest-solicitation-overview>
- Dear Colleague Letter 23-115: <https://www.nsf.gov/pubs/2023/nsf23115/nsf23115.jsp>
- Address questions about this DCL should be directed to: [edu\\_chips@nsf.gov](mailto:edu_chips@nsf.gov)
- A lot of sensors are built on the semiconductor technology, would microelectronics and bio-sensors with teaching and learning also fit in this subject?

A. Yes