

June 17, 2021

# Advanced Computing for Social Change Curriculum Development Workshop

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## XSEDE

Extreme Science and Engineering  
Discovery Environment



Supported by OAC 15-48562.

# Code of Conduct

XSEDE has an external code of conduct which represents our commitment to providing an inclusive and harassment-free environment in all interactions regardless of race, age, ethnicity, national origin, language, gender, gender identity, sexual orientation, disability, physical appearance, political views, military service, health status, or religion. The code of conduct extends to all XSEDE-sponsored events, services, and interactions.

**Code of Conduct:** <https://www.xsede.org/codeofconduct>

## Contacts:

- Event organizer: Kate Cahill, OSC, [kcahill@osc.edu](mailto:kcahill@osc.edu)
- XSEDE ombudspersons:
  - Linda Akli, Southeastern Universities Research Association ([akli@sura.org](mailto:akli@sura.org))
  - Lizanne Destefano, Georgia Tech ([lizanne.destefano@ceismc.gatech.edu](mailto:lizanne.destefano@ceismc.gatech.edu))
  - Ken Hackworth, Pittsburgh Supercomputing Center ([hackworth@psc.edu](mailto:hackworth@psc.edu))
  - Bryan Snead, Texas Advanced Computing Center ([jbsnead@tacc.utexas.edu](mailto:jbsnead@tacc.utexas.edu))
- Anonymous reporting form available at <https://www.xsede.org/codeofconduct>.



**XSEDE**

# Words Matter!

In line with XSEDE's Code of Conduct, XSEDE is committed to providing training events that foster inclusion and show respect for all. This commitment applies not only to how we interact during the event; it also applies to the training materials and presentation. It is not XSEDE's position to use, condone, or promote offensive terminology.

XSEDE instructors strive to keep inclusive language at the forefront. In the event that we have included inappropriate materials, verbal or written, please let us know at [terminology@xsede.org](mailto:terminology@xsede.org).

While XSEDE has no control over external third-party documentation, we are taking steps to effect change by contacting the relevant organizations; we hope this will be addressed by all third parties soon.

*If you see any terminology concerns in the following presentation or slides, we want to know!  
Please contact the Terminology Task Force: [terminology@xsede.org](mailto:terminology@xsede.org)*



**XSEDE**



## Data Science as an Enabler

SPICE 2019  
Summer Immersion Program



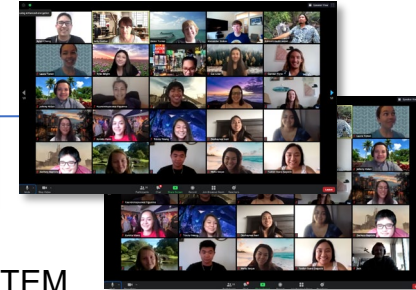
Research4Change 2019  
REU SITE



Research4Change 2020  
REU SITE



SPICE 2020  
Summer Immersion Program



NSF REU Site

PEARC19  
Maternal and Infant Health

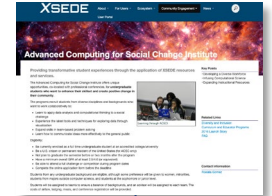


NSF CyberTraining

NASA Direct-STEM  
Cal State Los Angeles



ACSC20



NSF Includes (SPICE)

SC16  
Black Lives Matter



SC17  
Immigration



SC18  
Violence



SC19  
Maternal and Infant Health



2016

2017

2018

2019

2020

Funding for Chaminade's  
Data Science Program

Chaminade's First Data  
Science Students



# Advanced Computing for Social Change • Computing4Change (C4C)



- Founded in 2016 and co-located with SC
- Engages undergraduates from diverse backgrounds and disciplines
- Participants learn to apply data analysis and computational thinking to a social challenge
- Students work in groups and:
  - Construct a non-biased question for exploration
  - Use computational resources to create visualization to confirm or debunk hypothesis
  - Present results in teams using evidence-based analysis and visualization



# Social Challenges

- Black Lives Matter (2016)
- Immigration (2017)
- Violence (2018)
- Maternal & infant morbidity and mortality in the U.S. (2019)
- COVID-19, violence, health, environment (2020)



How does the language that you speak impact your birthing experience, specifically with birth hysterectomies?

*Alejandra Garcia Orosco, Biology and Microbiology, Cal State LA*



## IMPACT: 2016-2020 C4C Student Tracking

Participant Gender Distribution (N=126)	Count	Percent
Female	80	63%
Male	43	34%
Other	3	2%

Participant Racial/Ethnic Distribution (N=118)	Count	Percent
Asian	20	17%
African American/Black	25	21%
Hispanic/Latinx	36	31%
Native Hawaiian Pacific Islander	13	11%
White	18	15%
Other	6	5%



Evaluation data show effective engagement of students from non-STEM disciplines

Majority participants recruited from MSIs and institutions with limited research opportunities

Increase in # of underrepresented XSEDE student users

Participants demonstrate increased participation in XSEDE sponsored research opportunities



# ACSC Curriculum Development (2020 – 2021)



## ACSC Faculty Curriculum Development Workshop, July 2020

- 34 applicants; 20 accepted; 18 participated from 10 institutions including Albany State University, AUCC, Livingstone College, UMES, and UC Santa Barbara
- Disciplines – Biology, Computer Science, Economics, Philosophy, Political Science and World Languages,
- Evaluated via focus group, observation, and survey
- Overall, participants valued their experience, enjoyed the opportunity to network with like-minded faculty, and appreciated being exposed to new tools.

## Advanced Computing for Social Change (ACSC) Modules-in-a-Box Curriculum Materials

- Data Ethics, AI Blind Spots, and Data Preparation using maternal and infant mortality and morbidity problems and datasets – implemented at UPRM
- Data Ethics, Privacy, Modeling/Analysis using immigration problems and datasets
- Data Ethics and Scientific Visualization using COVID-19 and health disparities problems and datasets



# Workshop Staff

Linda Akli  
**SURA**



Kate Cahill  
**OSC**



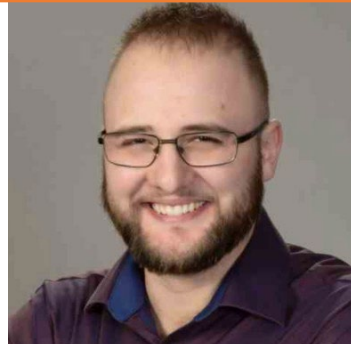
Unislawa Williams  
**Spelman College**



Wilbur Ouma  
**OSC**



Peter Vaillancourt  
**OSC**



John Holly  
**SURA**



# Workshop Agenda

Advanced Computing for Social Change (ACSC)  
Curriculum Development Workshop  
June 17 & 18, 2021  
Agenda

*All times Eastern Daylight Time (EDT)*

**Thursday, June 17, 2021**

11:00am – Noon	ACSC Introduction & XSEDE Classroom Resources
Noon – 1:00pm	ACSC Curriculum Modules – Unislaw Williams - Review Module-in-a-box materials, exercises, outcomes, tools
1:00pm – 1:30pm	<i>Lunch Break</i>
1:30pm – 3:00pm	ACSC Curriculum Modules cont'd
3:00pm – 3:30pm	<i>Break</i>
3:30pm – 4:30pm	Rylan Chong – Culturally relevant Data Science Program Development & Outcomes
4:30pm – 5:00pm	Wrap Up & Discussion Questions

**Friday, June 18, 2021**

11:00am – 1:00pm	Introduction to Using R – Kate Cahill
11:00am – 1:00pm	Using R for data exploration – Unislaw Williams
1:00pm – 1:30pm	<i>Lunch Break</i>
1:30pm – 3:00pm	Introduction to Computational Thinking and Data Science – Kate Cahill – Systems & Agent modeling classroom resources for teaching computational thinking
3:00pm – 3:30pm	<i>Break</i>
3:30pm – 4:30pm	Invited presentations and curriculum discussion
4:30pm – 5:00pm	Wrap up