

University of Kansas QuarkNet Center

Summer 2019 report

The University of Kansas (KU) QuarkNet center hosted a three-day workshop for high school physics teachers June 12-14, 2019. The workshop theme was “Computing in the Physics Classroom. Jim Deane of Ottawa High School in Ottawa KS helped KU center mentor Phil Baringer put together the workshop program and provided many of the activities for the workshop. The poster for the workshop is attached below.

On the first day of the workshop, Baringer gave an introductory talk motivating the use of computing tools in the physics classroom. Deane then gave an introduction to GlowScript and the workshop attendees did exercises with that platform. Lessons involving GlowScript were discussed.

The second day introduced two other computing platforms. Deane provided instruction on the use of Jupyter notebooks and the Anaconda tool. KU astronomer Jennifer Delgado presented on physics using spreadsheets. Baringer discussed the PICUP web site and some of the resources available to educators there.

On the morning of the final day Baringer discussed the role of computing in undergraduate research and Brian Schafer of Washburn University (Topeka KS) discussed computing in high school research that was done at Lawrence High School. In the afternoon the workshop attendees brainstormed about the application of these computing tools in their classroom.

The workshop schedule is attached below. The photo below shows the seven attendees.



QuarkNet Workshop Schedule

June 12-14, 2019

Malott 3059

Wednesday, June 12

9:00 AM Introduction to Workshop – why computing in the physics classroom? – Phil Baringer
9:30 AM Introduction to GlowScript – Jim Deane
10:30 AM Break
10:50 AM Physics with GlowScript – Jim Deane
Noon Lunch
1:00 PM GlowScript exercises
2:00 PM Break
2:15 PM Construct lesson plan
3:30 PM Discussion
4:00 PM Adjourn

Thursday, June 13

9:00 AM Brief tour of the PICUP site (<https://www.compadre.org/picup/>) – Phil Baringer
9:30 AM Introduction to Jupyter notebooks and Anaconda – Jim Deane
10:30 AM Break
10:50 AM Physics with Jupyter notebooks – Jim Deane
Noon Lunch
1:00 PM Physics with spreadsheets – Jennifer Delgado
2:00 PM Break
2:15 PM Exercises
3:30 PM Discussion
4:00 PM Adjourn

Friday, June 14

- 9:00 AM Computing in undergraduate research – Phil Baringer
- 9:30 AM Computing in high school astronomy research – Brian Schafer
- 10:30 AM Break
- 10:50 AM Groups construct student computing exercise
- 12:00 PM Lunch
- 1:00 PM Try out student computing exercise on other groups
- 2:00 PM Break
- 2:15 PM Groups report out on classroom exercises
- 3:30 PM Workshop wrap up -- feedback
- 4:00 PM Adjourn

COMPUTING IN THE PHYSICS
CLASSROOM,
A QUARKNET WORKSHOP,
JUNE 12 – 14, 2019,
ROOM 3059 MALOTT HALL,
UNIVERSITY OF KANSAS



We'll explore how to use computing to enhance physics learning and how to introduce computing skills in a physics context. We'll learn about tools like GlowScript and Jupyter notebooks and their use in teaching some physics topics. Participants will receive a \$100 daily stipend for their attendance. It is recommended to bring a laptop, but if you let us know in advance, we can provide a computer. No prior computing experience is required.

Contact baringer@ku.edu by June 10 to register.