



Comprehensive Program Review Physics & Astronomy

Emilie Hein and Kolo Wamba • 04.11.2022





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Meet the Team

2 FT Faculty FTE
3.3 Adjunct Faculty FTE

- *Transitional year:
previous 2 FT
faculty leave*

- Prof Wamba hired FT
- First iteration of Physics Jam
- Exemplary Program Award nominee
- nEXO and US DOE grant

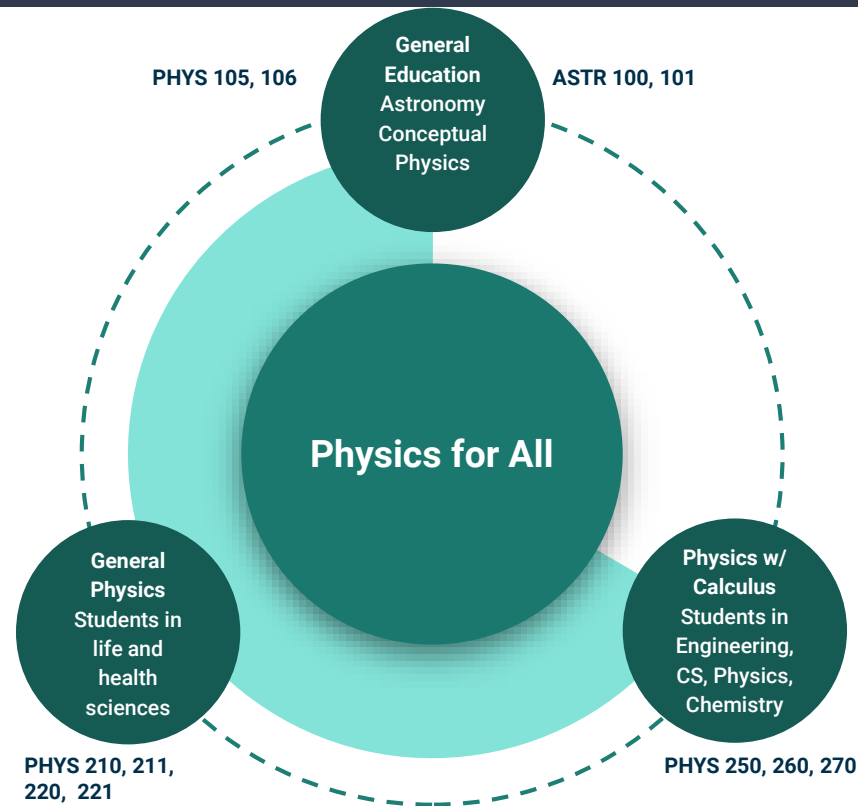
- New nEXO trainees cohort
- New FT faculty search?



- Prof Hein hired FT
- Department moves toward 100% ZTC/OER
- Sustainability
- COVID ⚠️ 🧑‍🔬 Online labs with kits (in-house)

- First cohort of nEXO student trainees
- National conferences: APS, SACNAS
- MyOpenMath grant projects completion
- Physics & Astronomy Club

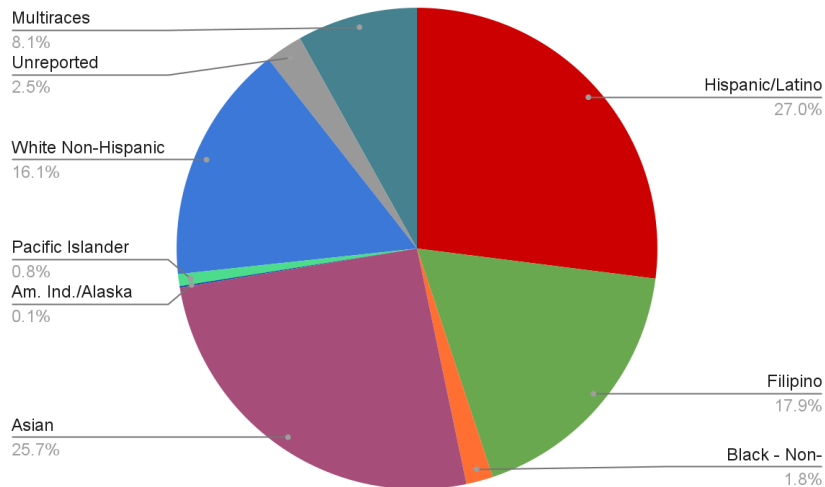
Physics & Astronomy at a glance



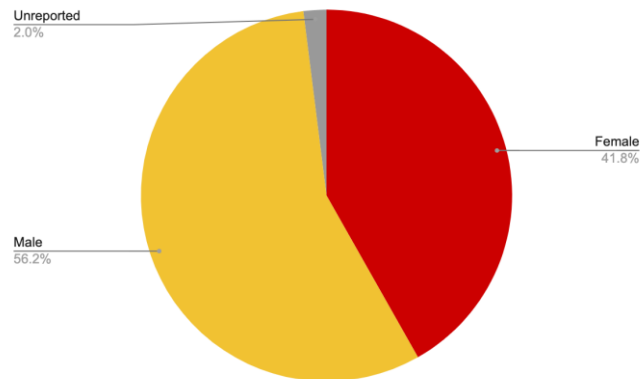
Upon completion of degree requirements, students will be able to

- Demonstrate a basic level of **scientific literacy** in physics, conceptual understanding of fundamental physics principles, awareness of different fields of physics and corresponding job opportunities.
- Apply the scientific method, qualitative and quantitative reasoning, advanced mathematical and numerical techniques to find **solutions to problems relevant to their future careers and current events**.
- Collaborate as part of a team to conduct lab experiments, measure real-world physical behavior, interpret experimental data using modern statistical tools, and **communicate** their findings effectively.
- Critically evaluate the treatment of physics in media and public policy, and demonstrate a basic understanding of how to **engage in physics in an ethical and socially responsible way**.

Who are our students?



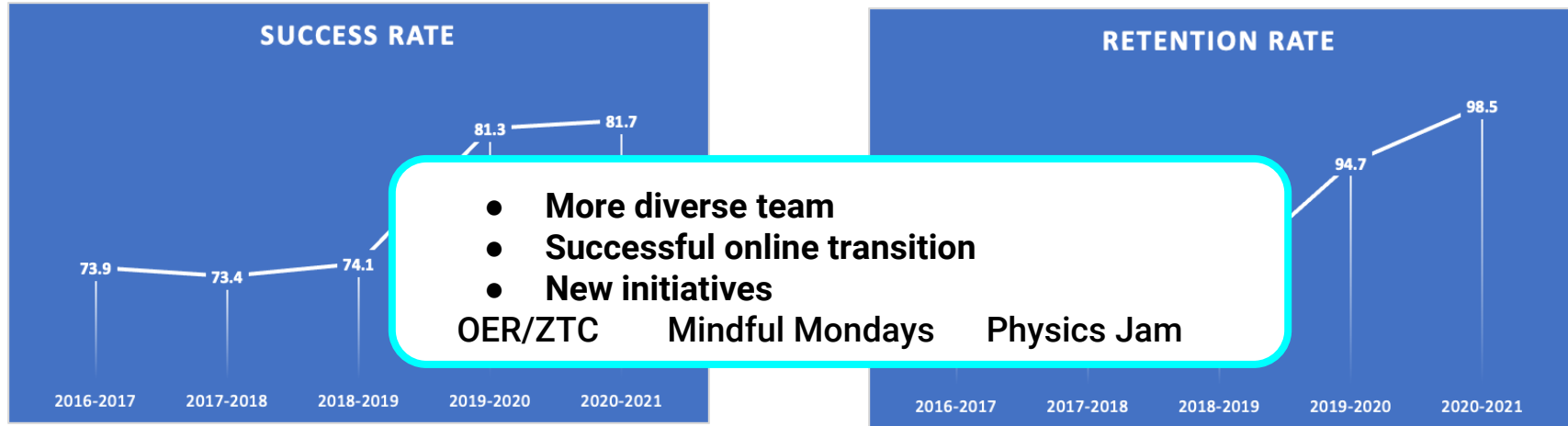
- Over 1000 students (unduplicated) students served 2020-2021
- 80.3% intend to transfer



- Only about 20% of female students in Physics with calculus courses

*All data provided by Skyline PRIE

Student Outcomes



- 24 Associate Degrees for Transfer in Physics awarded in 2019-20
- Program mostly supports students in other STEM areas: life and health sciences, engineering, computer science, chemistry

- **Pathways to Improved Representation in Advanced Nuclear Science**
- **Involving CC students in international research**
 - only CC institutional member of nEXO
 - Forging strong connections to large research institutions and national labs: Stanford, SLAC, TRIUMF
- **Community outreach**
 - bringing leading-edge nuclear science into communities where it hasn't been historically



Program Commitments



Diversity, Equity and Inclusion

- STEM Equity Institute; Equity Training Series; Equity Scholars
- Women in STEM panels
- Black Minds in STEM Matter! Panel
- nEXO DEI committee



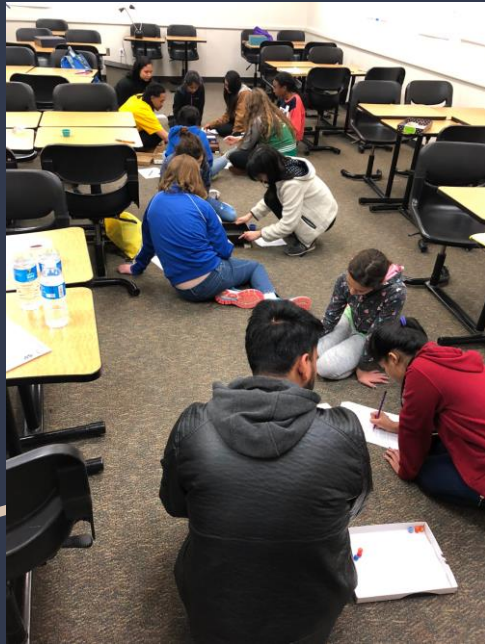
100% OER/ZTC

- Skyline OER/ZTC grants
- Statewide impact:
 - ASCCC OERI grants
 - ASCCC OERI Lead for Physics and MyOpenMath

Additional Committees

- Academic Senate
- Curriculum Committee
- SEEED
- MESA
- Umoja
- PCI

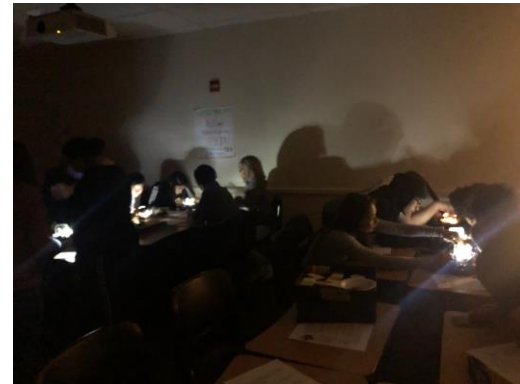
Community and Outreach



Expanding Your Horizons (EYH)

Conference for 6th and 12th grade young women

Particle Detectives workshop



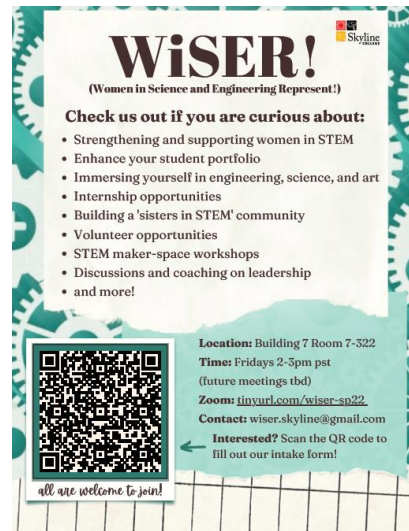
Community and Outreach




Student Clubs

Advisors for

- Physics & Astronomy Club
- Women in Science and Engineering Represent! WiSER!



Community and Outreach



Science, Technology, Engineering, and Math Division

MINDFUL MONDAYS

Start the week right with a guided mindfulness activity incorporating breathing exercises or sound meditation.

When: *Every Monday 11:00 - 11:30 a.m.*

Where: Zoom ID - **989 9190 7714**
Passcode - **403526**

Who: *All **students, faculty, and staff** are welcome and encouraged to attend and participate.*

CONTACT
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What's next?



01

Astronomy Program

- Popular courses
- Create new courses
- Improve success rates

02

Diversity, Gender Gap

- Gender gap in calculus-based physics
- Student Focus Group
- Outreach

03

nEXO

- Renew grant
- Expand reach of the program, with honors projects
- Python for Scientists workshop

04

Physics Jam

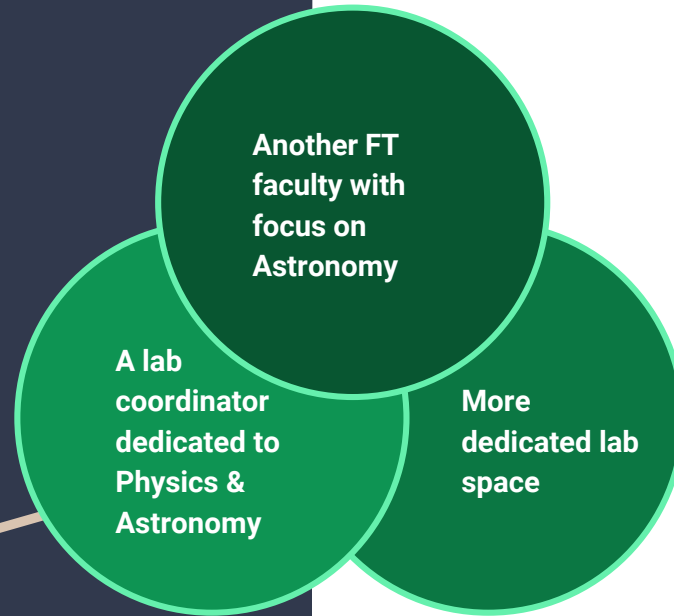
- Already proven to help student success
- Institutionalize the program
- Expand to more courses

05

Post Bac Program

- Specific to students pursuing medical and related degrees
- In demand
- New avenue to increase enrollment

What we need?



Thank you so much for your attention!