Development of a TA Training Program for Introductory Physics Labs

• Overview of current introductory physics labs

• Criteria

• Chronology (schedule)

• Components

• Cost
Three Introductory Physics Lab Courses

- **PHYS 0212 – *Introduction to Laboratory Physics***
  - 2 Credit hours
  - Algebra based
  - Co-requisite PHYS 0111 *Introduction to Physics 2*

- **PHYS 0219 – *Basic Laboratory Physics for Science and Engineering***
  - 2 Credit hours
  - Calculus based
  - Co-requisite PHYS 0175 *Basic Physics for Science and Engineering 2*

- **PHYS 0520 – *UHC Modern Physics Measurements***
  - 3 Credit hours
  - Calculus based
  - Pre-requisite PHYS 0175 or 0476 *Introduction to Physics, Science and Engineering 2*
The Structure of PHYS 0212
Traditional Labs

PHYS 0212 meets twice each week:

50 Minute Recitation – All of the students meet for a lecture on the basic theory and how the theory will be tested.

3 Hour Lab – The students work in groups of 2 or 3 to complete the experiments. The lab sessions have a maximum of 24 students and are run by a TA.
The Structure of PHYS 0219 Inquiry-Based Labs

PHYS 0219 meets twice each week:

50 Minute Recitation – All of the students meet for a lecture on the basic theory and how the theory will be tested.

3 Hour Lab – The students work in groups of 2 or 3 to complete the experiments. The lab sessions have a maximum of 24 students and are run by a TA.
Course Transformation Award Criteria

- **Time Management**
  - Not a huge burden for faculty or TAs
  - Easy for any instructor to implement
  - Avoid the hero model

- **Sustainable**
  - Avoid the hero model
  - Novice TAs become Expert TAs
Course Transformation Award
Chronology (Schedule)

- **Fall 2018**
  - Discovery (Observations)
  - Planning
  - Design/Implementation

- **Spring 2019**
  - Content Development (FER students)
  - Implementation
Course Transformation Award Components

- TA Interactions with the Equipment
  - Group Instruction
  - Mentor/Peer Instruction
  - Videos

- TA Interactions with the Students
  - 8 Modules (next slide)
  - Overlap with PHYS 2997
### Course Transformation Award Components – Student Interactions

**Danny Doucette**

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<tr>
<th>Module</th>
<th>Topic</th>
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<td>1</td>
<td>Getting ready for lab interactions</td>
<td>Lab TA meeting</td>
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<td>2</td>
<td>Helping students to learn epistemology of experimental physics through lab-work</td>
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<td>3</td>
<td>Developing equity in the labs</td>
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<td>4</td>
<td>Socratic questioning</td>
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<td>5</td>
<td>Reinforcing ideas, reaffirming identity as a Lab TA</td>
<td>Lab TA meeting</td>
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<td>Reflection and overview of training</td>
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<td>Anti-bias training</td>
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<td>8</td>
<td>Observations (videos)</td>
<td>PHYS 2997</td>
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Course Transformation Award
Cost (Budget)

- Equipment/software
- Undergraduate student (not FER)?
- Danny Doucette