MODERN, HIGHER-YEAR PHYSICS LABS

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There has been much discussion and debate regarding the role of undergraduate labs in physics education, ranging from playing a role in developing experimental skills, to exploring and verifying concepts from theory (see Smith, 2021 for an excellent commentary). In many ways, and especially post the COVID19 pandemic, lab sessions have become a primary contact point for students with teachers in terms of attendance rates, with a decline in lecture and non-assessed tutorials attendance. Inquiry-based learning, and an opportunity for students to engage with real experimental design and process has also been a trend, yet the traditional recipe-based lab seems to prevail in many programs; or at least a holistic approach is not present but rather individual units/subjects display elements of inquiry and open-ended labs. Traditional lab assessment in the form of e.g. logbooks and lab reports also do not capture the process of inquiry, experimental design, nor give students the permission to fail (much like journal publications rarely report null results). Yet inquiry-based labs are no guarantee students will engage productively, and creative approaches to assessment are often stymied by a lack of resources for marking (Phillips et al., 2021).

This workshop is an opportunity to bring together the Physics Education community at ACSME to share their best example of a modern lab design, along with how it is assessed or ideas for other form of assessment. The goal here will not be for the workshop facilitators to present and share only their experience, but rather stimulate a sharing of ideas and approaches that we can take back to our host institutions to enhance lab experiences. The authors ask participants to think about these questions before attendance but will stimulate discussion by sharing their favourite examples of these undergraduate experiments.

REFERENCES

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