

Y18b Spectroscopy Lab in an Activity-Based Astronomy Course

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Light is the main means by which astronomers study most astronomical phenomena. Thus, spectroscopy, the study of dispersed light based on the interaction between matter and light, lies at the heart of astrophysics. In order to promote the conceptual understanding of spectroscopy and its use in astronomy, "Spectroscopy Lab" is developed to observe emission and absorption lines in an ordinary classroom and has been incorporated into an introductory astronomy course for use by collaborative student learning groups. The effectiveness of this lab-based, learner-centered instruction as well as students' conceptual understanding are evaluated by a research-validated assessment tool, "Light and Spectroscopy Concept Inventory (LSCI)", and the results demonstrate that the students' learning gains on this topic are greater than or equal to the gains observed in activity engagement astronomy courses at American universities. This suggests the importance of incorporating "hands-on," "eyes-on" observations/activities in astronomy courses.