

1163-A1-1016 **Carol Ann Downes*** (downes@hendrix.edu). *Discovering L'Hospital's Rule In A Calculus Lab*. Preliminary report.

Within a 50 minute calculus lab activity, students discover L'Hospital's Rule for the $0/0$ and ∞/∞ indeterminate forms by working through a scaffolded activity in small groups and using open-sourced technology. First, students analyze a limit with form $0/0$ by exploring the linear approximations of each function in the ratio, and then, students explore a limit with form ∞/∞ by analyzing the rates of change of each function in the ratio. Essentially, students learn the why and how behind L'Hospital's Rule for these forms by discovering the overarching structure of the proof as explored through examples. Once they have discovered the rule, students synthesize what they learned in a lab essay assignment graded not just on mathematical correctness, but also on how well the student guides the reader through learning L'Hospital's Rule. By introducing L'Hospital's Rule in this way, we engage and challenge students on the foundational concepts even if they have seen the mechanics of the rule in high school. (Received September 14, 2020)