

## ED13F-04: Case Study: Managing Undergraduate Interns in the Context of Multidisciplinary Projects

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Internship opportunities can be immensely beneficial to both the students who pursue them and the labs that employ them. However, optimal results for all stakeholders can be uncertain. Several factors compound this issue. In this case study, the highly multidisciplinary nature of the BioEngineering Instrumentation Group at NASA Ames Research Center has made productively integrating short-term summer interns challenging. In general, taking on more undergraduate interns during a given time period can lead to diminishing returns, particularly if those interns are primarily short-time interns with few long-term senior students present.

Introducing a level of industry-style project management processes can help. On the one hand, extreme formality can reduce the enthusiasm that students can bring; also, time constraints on internships make extensive training in formal process an investment with comparatively little return. On the other hand, lack of process can result in many forms of wastage. A moderate, "lightweight" level of process – i.e., simple processes with high payoff to time invested ratios, including processes to effectively handle multidisciplinary issues – can yield both a far more efficient lab, and a richer educational experience for the interns. In this case study, we implemented simple processes such as brief weekly stand-up meetings, a standard action item / bug tracking process, and deadline-based scheduling with prudent reserves and critical path tracking.

To evaluate these steps, several parameters were considered: the number of projects the lab could successfully pursue, the number of interns that could be successfully integrated onto each project, diversity of student intern educational backgrounds, student satisfaction, student understanding of expectations, and student preparation for industry-standard work. Generally, outcomes were enhanced across the board, even with imperfectly implemented processes. "Lightweight" process implementation is shown to be tremendously effective in a multidisciplinary internship context.

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