

Improvement of Biochemistry 2002 through experimental modification and organization of course materials

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ABSTRACT

The University of Missouri Biochemistry department offers a variety of courses, each designed with a specific purpose and scheduled to avoid overlap. Biochemistry 2002, sophomore lab, is currently an elective course meant to bridge the gap between the introductory Biochemistry 1090 offered to freshmen and Biochemistry 4270, a junior level class. In the past, the course has been burdened by inefficient experiments and lacking in both continuity and structure.

My ultimate goal is to improve course coherence by redesigning experiments to increase classroom success rate, cataloging materials to facilitate lab setup, establishing realistic learning objectives, and generating new assignments to be compiled on the university H-drive. The course is subdivided into DNA Cloning and Enzyme Kinetics laboratories. The objective of the first seven weeks is to clone a tobacco acid phosphatase gene, NtPTP1, into the PET28a expression vector. The final four weeks introduces students to a protocol designed to purify the PTP1 protein from an E. coli cell lysate and analyze the activity of the enzyme at several pHs.

Upon completion of the course, a solid framework of experiments and concepts has been established, all necessary materials have been catalogued, and a comprehensive list of potential issues has been outlined for future instructors. A new professor will no doubt find it imperative to adjust learning objectives to suit his/her specific teaching goals and personal experience; however, the preexisting foundation should minimize preparation time.