

Mathematics for the Laboratory Sciences

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Abstract

Each year, well over a million students take college algebra and related courses. Very few of these students take the courses to prepare for calculus, but rather because they are required by other disciplines or to fulfill Gen Ed requirements. The present article discusses what the current mathematical needs are in most of those disciplines, particularly the laboratory sciences that are responsible for sending us the majority of those students. The lab sciences, as well as others in the social sciences, need an emphasis on conceptual understanding and graphical reasoning, the ability to work with data and knowledge about statistics, and problem solving via mathematical modeling instead of the development of algebraic skills. The discussion in the article is accompanied by a variety of illustrative examples that highlight the kinds of mathematics that is used in the various fields, especially in the biological sciences. The article also discusses ways in which statistical reasoning and methods can be integrated into college algebra and precalculus courses in natural ways that support the usual topics in those courses.