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We present an overview of SIMIODE - Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations (www.simiode.org). We will discuss the educational resources and the opportunities for collaboration and publication (double-blind peer-reviewed, all open source) provided by SIMIODE.

We will discuss the modeling first approach to teaching differential equations in both the classroom and research setting.

The authors are part of an interdisciplinary research group studying bioremediation. One of our projects, that we will discuss, involves repurposing a common organic waste product, spent tea leaves, as a filter material that is able to remove heavy metal pollutants from water.

Our research group includes students, some of whom have never studied differential equations or statistics. A most efficient way to prepare these students, so that they can understand the material (differential equations and non-linear regression) on the level necessary to contribute, is to use the “modeling first” approach.

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