**SIMIODE EXPO 2025 Panel on SIMIODE Textbook Uses**Friday, 14 February 2025, 5:00 - 6:00 PM Eastern US time

For the past 26 years, I have taught mathematics and computer science courses at Goshen College. I generally teach eight courses per year, and upper-level courses are typically offered every second or third year. I have taught over 50 different courses. So, it has been important to have easily usable textual resources for my courses.

I have taught the Differential Equations course every two years for most of the time I have been at Goshen College. The students are typically mathematics, physics, and engineering physics majors but I have also had an occasional chemistry or biology major. For most of that time, I used the text by Blanchard, Devaney, and Hall. I like its emphasis on graphical and qualitative techniques in addition to the basic symbolic techniques. I also like its modeling projects.

I adopted Bryant’s text in 2022 and used it again in 2024. There were two motivating factors. First, I had taken an MAA Minicourse on inquiry-based approaches to differential equations and another on SIMIODE. I thought the adoption of Bryant’s text would be an efficient pathway into the treasure trove of projects available in SIMIODE, not unlike the treasure trove of modeling projects found at COMAP. Second, Bryant’s text was less expensive than the Blanchard, Devaney, and Hall text.

In my differential equation courses, grades depend upon student performance on weekly individual assignments, five to seven team projects, and two comprehensive in-class exams. Each of these three components are weighted equally or almost equally.

There were four primary differences in my course because of the change in texts. First, following the suggested syllabus, I spent two weeks on Laplace transforms with Bryant’s text whereas I had not previously covered the topic. Previously, I offered students interested in learning about Laplace transforms the opportunity to complete an optional extra credit assignment based upon the corresponding chapter in the Blanchard, Devaney, and Hall text. Instead, I had spent time on Poincare maps, discrete dynamical systems, and the period doubling path to chaos. Second, the SageMath code was integrated more into Bryant’s text and resource materials. Third, I fought a bit with the later introduction of graphical and qualitative techniques. Fourth, I found the projects in Bryant’s text to be more prescriptive and convergent; hence, my last project assignment ended up using project options from the Blanchard, Devaney, and Hall text.

Students had generally favorable comments about the text in my final survey in which I asked them how they had made use of the text, classes, artificial intelligence apps, and other people.

I have placed in a compressed zip file the class notes, assignments, and projects I developed and used during my most recent offering of the course. Also included are these remarks, student responses to the final survey, the syllabus, and schedule. These are the kind of resources I like to have when teaching a course for the first time. This zip file can be found at <https://www.goshen.edu/faculty/dhousman/> under the “Presentations” section.