1163-J5-1404   **Francesca Bernardi*** (`fbernardi@wpi.edu`) and **Manuchehr Aminian** (`maminian@cpp.edu`).
Epidemiology and the SIR model: Historical Context to Modern Applications.

Learning how ODEs are commonly used to model real-world problems can be a gateway into applied mathematics for undergraduate students. We present a project to teach students about mathematical epidemiology utilizing historical documents and primary sources, as well as data and articles from recent events. Students begin by reading excerpts of an early 1900s report discussing the Indian plague epidemic and the seminal 1927 Kermack and McKendrick paper introducing the SIR model. Students then fit SIR models to available compiled data sets from the Ebola outbreak of 2014-2016 in West Africa. Additionally, students explore how the outbreak is affected by context and culture, such as local attitudes towards government health recommendations. Throughout this project, participants explore mathematical, historical, and sociological aspects of the SIR model and approach data analysis and interpretation. Based on their work, students form opinions on public health decisions and related consequences. This curriculum has been assigned (in different versions) as part of a class syllabus, as an undergraduate research project, and as an extra credit assignment at multiple universities in the United States. Feedback from students has been encouraging. (Received September 15, 2020)