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Integrated Calculus and Physics Projects Based on Roller Coaster Design.

We present projects used in Calculus I that are based on designing a safe and thrilling roller coaster. Students integrate Mathematics and Physics in their analysis with a strong emphasis on technical communication throughout. These projects are motivated in part by a NYSED funded school year program targeted at middle and high school students that culminates at a week long, roller coaster camp each summer and the use of a programmable Maxflight 2002 Virtual Reality Roller Coaster that resides on our campus. We discuss extensions to other courses and our experiences in managing projects in large lecture sections with more than 100 students. (Received September 13, 2007)