1163-A1-488   **Lisa Hilken*** (`hilken@math.uni-tuebingen.de`), , Germany, and **Carla Cederbaum** (`cederbaum@math.uni-tuebingen.de`), , Germany. *Hands-on Differential Geometry.*

In the course "Hands-on Differential Geometry", pre-service teachers develop several definitions of Elementary Differential Geometry by themselves. Topics are among others the curvature of plane and space curves and surfaces. The course consists of four cycles. At the beginning of each cycle, every group chooses one of the given problems to work on. The students then have the possibility to gain some intuition about their mathematical problem by using hands-on materials. Afterwards, they try to solve their problem in a mathematically rigorous way. At the end of each cycle, every group presents their results to the whole group. For example, the students are asked to develop a notion and definition for the curvature of plane curves. They may ride a bike or walk along chalk-drawn curves to get a feeling for the relation between the radius and the curvature of a circle or the radius of a circle and the angle of the handlebars to the bike. The course aimed at strengthening availing beliefs about mathematics and the self-efficacy. We will describe the seminar including some of the mathematical problems we posed, give an idea of the quality of the solutions found by the students, and share insights from the accompanying research. (Received September 08, 2020)