Vertical sleeve gastrectomy is a weight loss surgery in which around 75% of the patient’s stomach is removed and the remainder sealed into a narrow sleeve using surgical staples laparoscopically. The procedure is an effective surgical weight loss intervention, but suffers from a small percentage of potentially fatal complications due to leak formation in the new sleeve. While the etiology of leaks is poorly understood, a common leak formation site is at the ends of the staple line. Because the current laparoscopic staple technology used in this procedure is only able to cut in straight lines, the ends of the staple line are sharp corners that act as stress concentrators. The goal of this project is to develop a laparoscopic stapler with a bendable end effector, allowing the creation of nonlinear staple lines. This involves assessment of customer and technical requirements for a laparoscopic stapler, and subsequent refinement and detailed design of an existing design concept that is able to create unique stapling geometries via the use of interlocking, modular segments. The final design will be modelled using CAD and finite element analysis software.