Standards (9-12)

Adventist Education Standards	Next Generation Science Standards
https://adventisteducation.org/sst.html	https://www.nextgenscience.org/dci-arrangement/hs-ets1-engineering-design
Currently, there are no Adventist Education Standards for Engineering at the high school level. These are the standards that will be covered by doing this project: **Secondary Science Standards (2019)** **Secondary Technology Standards (2018)** **Secondary Mathematics Standards (2018)**	**HS-ETS1 Engineering Design**
Biblical Connection	
Science **A&P.1, BIO1.1, CHM.1, ESC.1, PHY.1** Identify SDA Christian principles and values in correlation with science. **Mathematics** **AI.1, AII.1, CA.1, CM.1, GM.1, PC.1** Identify the principles of SDA Christian values in correlation with mathematics.	
Collaboration	
Science **A&P.2.3, BIO1.2.3, CHM.2.3, ESC.2, PHY.2.3** Utilize the principles and methodologies of cooperative learning. **Technology** **T.9-12.GC.3** Communicate complex ideas effectively to diverse audiences. **T.9-12.GC.6** Collaborate to work with others to investigate solutions.	

Research	
Science **A&P.3.3, BIO1.3.3, CHM.3.3, ESC.3.3, PHY.3.3** Read, write, and interpret scientific documents (lab write-ups, journals, scientific publications). **A&P.3.4, BIO1.3.4, CHM.3.4, ESC.3.4, PHY.3.4** Conduct research in the content area. **Technology** **T.9-12.GC.4** Develop a greater understanding of how human organizations and actions impact global systems. **Mathematics** **AI.3.2, AII.3.2, CA.3.2, CM.3.2, GM.3.2, PC.3.2** Conduct research (locate, observe/gather, analyze, conclude).	**HS-ETS1-1** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Design	
Science **A&P.2.1, BIO1.2.1, CHM.2.1, ESC.2.1, PHY.2.1** Develop critical and creative thinking skills (analysis, evaluation, divergent questioning, modeling). **A&P.2.2, BIO1.2.2, CHM.2.2, ESC.2.2, PHY.2.2** Understand and utilize the scientific method of problem solving. **A&P.3.1, BIO1.3.1, CHM.3.1, ESC.3.1, PHY.3.1** Recognize scientific principles and laws as tools to solve problems in everyday life. **A&P.3.2, BIO1.3.2, CHM.3.2, ESC.3.2, PHY.3.2** Apply the scientific method in analysis of controversial topics, e.g., cloning, global warming, stem cell research. *Continued on Next Page*	**HS-ETS1-2** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. **HS-ETS1-3** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Design (continued)	
Technology **T.9-12.CD.5** Identify and implement a targeted design process for developing concepts, testing theories and solving authentic problems. **T.9-12.CD.6** Recognize design as part of a cyclical process that includes development, testing and refinement. **T.9-12.CD.7** Appreciate ambiguity, perseverance and the ability to troubleshoot open-ended problems. **Mathematics** **AI.2.2, AII.2.2, CA.2.2, CM.2.2, GM.2.2, PC2.2** Utilize the problem-solving process (explore, plan, solve, verify). **AI.2.3, AII.2.3, CA.2.3, CM.2.3, GM.2.3, PC.2.3** Develop higher-order thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).	
Analysis	
Science **A&P.3.5, BIO1.3.5, CHM.3.5, ESC.3.5, PHY.3.5** Engage in various uses of technology. **Mathematics** **AI.3.1, AII.3.1, CA.3.1, CM.3.1, GM.3.1, PC.3.1** Use a variety of strategies in the problem-solving process (i.e. patterns, tables, diagrams). **AI.3.3, AII.3.3, CA.3.3, CM.3.3, GM.3.3, PC.3.3** Perform calculations with and without technology in life situations. **AI.7.2, AII. 7.2, CA. 7.2, CM. 7.2, PC. 7.2** Predict patterns and generalize trends. **AI.7.3, AII. 7.3, CA. 7.3, CM. 7.3, PC. 7.3** Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.	**HS-ETS1-4** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.