

## **Addendum to the “*Statement of Integration of Faith and the Engineering Discipline*”**

It is my explicit goal to live a life of integrity before my students and this process involves putting into practice the beliefs and convictions that I espouse. How I act in the classroom, in my office, and interacting with students in other settings should be consistent and model Christlikeness. Furthermore, I want to share with students how I think about my discipline and the activities of engineering from a deliberate, intentional, uniquely biblical perspective. In the present brief paper, I present some practical examples of Biblical integration which I have practiced with Cedarville students, both inside and outside the classroom. As an advanced organizer, these elements include the following: (a) class and small-group devotionals, (b) at times directly teaching Bible principles, (c) integrating biblical principles into teachable moments with students, (d) introducing biblical leadership principles, (e) and personal connections with students through informal mentoring, having students to my home, and participation in structured mentoring relationships.

### **ENGR 1010 Digital Logic Design**

In the Digital Logic Design course, we begin class with a biblical proverb that we memorize together each week. For example, I have been using Proverbs 1:7-8 as the first two proverbs each semester. I invite students to suggest the remainder of the proverbs that we memorize together the rest of the semester. Each class period, I take 2-3 minutes in order to discuss the verse, unpack potential implications, apply it to my own life, and challenge students to apply it to their respective lives.

I have found that being transparent—and talking about how each verse has some application in my own life—often has opened the door for further meaningful conversations and students’ meditation-on and application-of the various passages. One such example occurred recently and aptly illustrates how cogent this instructional practice has been to students’ lives. After class, a freshman student wanted to further explore potential implications of Proverbs 1:8, “Listen my son to your father’s instruction and do

not forsake your mother's teaching," since she was significantly struggling with honoring her mother. As we made some in-depth explorations, while walking to chapel, I was able to encourage the student to really consider how she could both obey God's word and better live in peace with her mother.

Beyond the daily proverb, I also take opportunities to apply *biblical-thinking* to the discipline of digital logic whenever possible. Some examples here include reflecting proper praise to God for giving people the ability to understand and consistently improve computing systems. I stress how these incredible improvements, known as "Moore's Law," are relatively rare—but that it is God who has given people "this measure of dominion." Referring to God-given wisdom, Proverbs 8:12 states: "I wisdom dwell with prudence, and find out knowledge of witty inventions." I am also quick to point out that God is the one who has established the boundaries of what people are able to do and that we should not look to technology to be our "savior," as secular-thinking often espouses.

Another example relates to one of the founding fathers of logic, George Boole (the *Laws and Theorems of Boolean Algebra* are named after George Boole). Following extensive research into his life, I discovered that two of his key motivations in developing these mathematical tools were to try and (a) better understand the trinity and (b) to help prove the validity of other biblical concepts. I share these (and a few other details) regarding his life in order to inspire my students and remind them that many Bible-believing Christians have made significant contributions to modern society. Additionally, science and the Bible are not antithetical but, much to the contrary, are complimentary of one another. As such, I share various examples in class that prompt CU students to further explore the relationship between biblical principles and the engineering science that they learn from the course text and lectures.

### **ENGR 3010 Advanced Digital Logic Design**

In ADLD, I have made my practice to have the junior-level students share the class devotional each morning. This process usually involves reading a passage of Scripture and sharing why it was meaningful and applicable to the students' lives. I typically make a few

follow-up comments of my own and then lead the class in prayer. I think this protocol is a great way to develop spiritual leadership in an upper-level class, set a spiritual tone for each class period, challenge students to think biblically about what they will be learning during the lecture, and encourage spiritual conversation in the classroom.

The ADLD course has a laboratory connected with it, which provides additional opportunities to mentor students and integrate faith on a more individual basis. In particular, a few students typically tend to struggle somewhat in getting their robot design to function properly and, consequently, sometimes become frustrated and/or discouraged. During such times, I attempt to both encourage them and challenge the students to persevere—reminding them that, according to Proverbs 14:23: “All hard work brings a profit, but mere talk leads only to poverty.” We often learn the most (and sometimes the best), when we must first struggle somewhat and do not immediately accomplish the results for which we hope.

### **ENGR 4810 Computer Engineering Senior Design**

For the last few years, I have chosen to utilize Gen. Loren Reno’s book, *“10 Leadership Maneuvers: A General's Guide to Serving and Leading,”* as one of the required readings for the class. This book provides many opportunities to discuss Christ-like servant-leadership in both the marketplace and on the job. Students have responded positively and many impactful discussions have occurred in class from having discussed the book. For multiple reasons, many CU engineering majors historically have eventually assumed leadership roles in their respective engineering fields. As such, I desire to provide some early-experiences in class, to help develop these leadership skills—and to integrate biblical principles in order to cultivate students’ desires to exercise present and future leadership from a biblical perspective.

### **ASEE Robotics Team**

Throughout the past 20 years, I have had the privilege of advising many CU engineering robotics teams. Multiple times annually, I have the opportunity to remind the team

members that God makes things far better and more robust than whatever we humanly can make. If we change just one line of code, then the robot could go from functioning completely and correctly—to not functioning at all. This phenomenon provides a very natural opportunity to encourage humility, which is often needed in order to maintain an attitude of awe for God. I often also contrast how the ideas of evolution and intelligent design are very different. Eons and randomness do not produce working robots. Much to the contrary, the fragility of designs clearly demonstrate that 90% of the right design typically produces a non-functioning solution that would earn zero points. Only when the design is complete will there be any hope of good function and, even then, one small perturbation can render an otherwise superb design to be useless. In sum regarding this point, the robotic team competition provides a very natural and important segue into meaningful discussions regarding evolution, creation, and intelligent design.

Following is one concrete example regarding this principle: At the 2019 robotics competition, we had a set of robots that we had duly tested repeatedly and they were performing as expected (nearly every time). Our confidence was high and we were all very hopeful. In the first run of the actual competition, within two seconds of having started, the robot began behaving very erratically. The result not only scored zero points, but also the first robot ran into the second robot, preventing it from scoring as well. This occurrence was a devastating blow for the student team members and gave opportunity for a spiritual-teachable-moment. After about 10 minutes had passed, I walked back to the pit area and reminded the team captains of what we had discussed before the competition, namely that we were here to glorify God and represent Him well. Proverbs 16:9 states the sovereignty of God principle: “A person plans his way, but the Lord directs his steps.” We trust in the sovereignty of God and, if He chose exaltation for us, then we would praise Him; and, if he chose humiliation, then we would still praise him. In this specific case, God chose both. When reviewing the video, we discovered that a flash from a camera caused the robot to misbehave, so a respectful appeal was made to the judges, and a rerun was permitted. Without the flash, the robots worked as designed and earned a very good score, allowing the team to win first place. Irrespective of the positive competition outcome, however, the most valuable aspect of the event was the life-long spiritual lesson and

various biblical principles that students were able to see in real-time-action. I could have lectured to my students in class about Ecclesiastes 9:11: “I have seen something else under the sun: The race is not to the swift or the battle to the strong, nor does food come to the wise or wealth to the brilliant or favor to the learned; but time and chance happen to them all.” However, given the dynamics of the competition—and my availability to provide spiritual input at the impactful teachable moment—the results are cogent life-lessons that most of the students will carry with them the rest of their professional lives.

For several years, the robot teams (that I have led) have begun each Saturday morning meeting with a short time of Bible reading and devotion, having been led respectively by nearly every team member at least once throughout the school year. After the student finishes, I typically follow-up with a few thoughts of my own regarding the passage and then lead the group in a time of prayer. This protocol aptly sets a tone that our focus is on honoring God in all that we do, rather than a tone of our sole objective being to win or otherwise beat others in competition.

### **Guests in our home:**

My wife and I have routinely have had each of my classes to our home once per semester. I have had both some great conversations over the years and also a few that have been a bit disappointing. It seems the dynamics of these social events hinge on the personalities of those who attend—but they are also influenced by my leading (or lack thereof). More recently, I have made a more concerted effort to have each student around the table share a blessing or something that God has been teaching him/her. I have found this simple prompt can turn the attention to conversations that are more edifying and also provide more opportunities to potentially discuss and share our respective walks with God and how we can become more Christ-like.

### **Open Door in My Office:**

My five office hours per week are openly posted but, additionally, I try to maintain an open-door policy. As such, I encourage students, advisees, and robotics team members to come

and talk anytime they feel a need or to desire do so. Within this context, I have had many opportunities to discuss life-altering circumstances, such as relationships with girlfriends, parents, roommates, and the like. Additionally, I often have had in-depth discussions regarding potential career decisions, in addition to the more routine exchanges regarding the course, class work, and academic success. In all these conversations, I try to incorporate biblical wisdom and instruction; I often take the opportunity to pray with students and ask God for wisdom and his leading in their lives.

**Fit to Be Tied:**

My wife Susan and I have had the privilege of mentoring couples (as many as three couples in one year) through the "*Fit to be Tied*" program at Cedarville. We usually meet in our home for dessert and conversation. In this setting, there have been numerous opportunities to challenge each couple to honor God in their relationship and prepare for a life of service together. We have kept in contact with some couples for many years after graduation.