Finding Equilibrium

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Introduction

Stress rarely comes alone. Seldom have I become overwhelmed by just one assignment or one event. The difficulty comes from a combination of challenges building on top of each other. As these challenges accumulate, maintaining a balanced lifestyle increases in importance. This paper and accompanying portfolio will detail my experiences in finding balance. I have found it to be similar to the theory of static equilibrium.

Static equilibrium is the unifying theory behind almost all structural engineering work. This theory is a synthesis of the work of Sir Isaac Newton, Simon Stevin, and Pierre Varignon. For a body to be in static equilibrium, it must be at rest. This means that the linear acceleration $a$ and the angular acceleration $\alpha$ about the body’s center of gravity equal zero (Leet, Uang, & Gilbert, 2002). Three conditions are required for this to happen: a sum of zero forces in the horizontal direction, a sum of zero forces in the vertical direction, and a sum of zero moment (torque) around any point. In equation form, this looks like:

$$\Sigma F_x = 0$$
$$\Sigma F_y = 0$$
$$\Sigma M_z = 0$$  (Leet et al., 2002)

As a college student majoring in civil engineering and seeking to enter the field after I graduate, I have seen a variety of challenges. Academic work provides enough to keep anyone occupied. I have also taken on leadership positions with the University Honors Program Student Association (UHPSA), the University of North Carolina at Charlotte student chapter of the American Society of Civil Engineers, and Chi Epsilon Civil Engineering Honor Society. These responsibilities result in challenges, which I will refer to as “loads,” that have threatened to overwhelm me at many points during my academic career, but I have been able to find balance.
With this paper and portfolio, I would like to show these loads in depth, how I responded to the responsibilities, and how I kept my balance or equilibrium. To accomplish this, I have selected seven artifacts to represent each semester of college I have completed. I do not wish to present it as being a perfect process, for I have stumbled many times trying to remain balanced. What I will present are the strategies that worked for me and common pitfalls to avoid in order to help future students. As my time as a student comes to a close, I want my experience to be beneficial for those coming after me. Sometimes, all we need is a little bit of extra support to believe that we can do it, and that can make all of the difference.

**Theoretical Context**

For structural engineering, there are standard “loads” that are used for design purposes. The standard guideline is a document produced by the American Society of Civil Engineers (ASCE) and the Structural Engineering Institute (SEI), known as ASCE/SEI 7 (American Institute of Steel Construction, 2011). Section 2.3 of this document presents the load combinations for Load and Resistance Factor Design (LRFD). LRFD applies safety factors to both the loads and the resisting structural members, as load forces are increased while the structural strength is reduced. Using statistical analysis of the worst possible combinations of different loads that could be present, the safety factor on the load is applied through the following load combinations:

1. $1.4D$
2. $1.2D + 1.6L + 0.5(L_r \text{ or } S \text{ or } R)$
3. $1.2D + 1.6(L_r \text{ or } S \text{ or } R) + (0.5L \text{ or } 0.5W)$
4. $1.2D + 1.0W + 0.5L + 0.5(L_r \text{ or } S \text{ or } R)$
5. $1.2D + 1.0E + 0.5L + 0.2S$
6.  $0.9D + 1.0W$
7.  $0.9D + 1.0E$

Where:

- $D =$ dead load
- $L =$ live load due to occupancy
- $L_r =$ roof live load
- $S =$ snow load
- $R =$ nominal load due to initial rainwater or ice exclusive of the ponding contribution
- $W =$ wind load
- $E =$ earthquake load

Each new structure that is designed is analyzed for each of the seven loading cases and designed to withstand each combination. A structure must have enough strength in each area to be deemed sufficient. If one of the load cases is greater than the structural strength, static equilibrium is not achieved and the system will fail.

Taking this idea, I have presented each of my artifacts as a different “loading type” I have faced during school. Each semester has presented a new set of challenges and I have represented these as different loading cases. With this, the new metric is as follows:

1. Fall 2012: Adapting to College Life
2. Spring 2013: Complacency and Team Leadership
3. Fall 2013: Confidence and Staying Active
4. Spring 2014: Maintaining Internal Equilibrium
5. Fall 2014: Leadership and Service
7. Fall 2015: Testing and Accomplishments
The first challenge I took on in college was joining UHP, and I was far from certain that I would be able to balance all my responsibilities. I had heard about the difficulty of engineering, and here I wanted to add more work onto what I was already going to do. I liked the idea of honors, but my main goal was to live in honors housing. Would I be able to perform at the academic level expected from Honors students?

There were many difficult aspects of my first semester. The advanced placement courses I had taken in high school had prepared me for the college workload, however there was a big difference between doing homework in a college dorm versus my house. It was far easier to spend time with my friends rather than do my work. I found it challenging to finish my work with this limiting work ethic.

My first honors class was Honors Freshman Seminar and the assignments for that class required an out-of-the-box approach. Our final project for the course was to create an e-portfolio to sum up our experiences in our first semester. I have struggled with projects with artistic design components as long as I have been in school. My talents are more easily applied to calculating numbers and remembering facts, rather than seeing an optimal layout of a page. Suffice to say, I had low expectations for how my portfolio would turn out.

The key piece of the project was the overarching metaphor. We were all required to select a metaphor that summed up our college experience so far. I was initially struggling to come up with a metaphor that was not clichéd. Our instructor, Professor Julie Hicks, had us do a word-association exercise in class to help those of us who were stuck. As she read out a category, we were to write down our first thought. When the category “favorite childhood
game” came up, I thought “Hungry, Hungry Hippos.” I am still not sure why I thought of that. Hungry, Hungry Hippos was never my favorite game and probably never in my top five. Still, it was the first I thought of, so I wrote it down.

After class, I was speaking with a few of my friends in the course. We discussed what we thought of the assignment and all agreed that it had been a fun exercise. I was skeptical of some of my answers. “Hungry, Hungry Hippos? How could I possibly use that as a metaphor?” As soon as the words left my mouth, I started thinking about how it could work. Suddenly, it seemed that the metaphor was creating itself. The idea worked itself out within a few minutes. I remember leaving the Fretwell building on campus with vigor and energy. I happily shouted out my idea to a friend I passed on the way back to my dorm room. None of the assignments I had done so far in college had gotten me as excited as I was then.

Unfortunately, that was where the fairy tale almost fell apart. I waited far too long to get started on the portfolio. By the time I began working, my initial excitement was gone and had been replaced with stress. I ended up finishing my portfolio less than a hour before it was due in class (I have done this to myself far more than I would care to admit).

My last-minute approach was visible through several parts of the portfolio. The text was either difficult to read or not visible in several spots. Some of the pictures I used for backgrounds were blurry. Additionally, the navigation bar was awkwardly placed and difficult to use. As for the content of the portfolio, a lot of the reflections on my artifacts did not stray beyond superficial looks. The portfolio was mediocre overall.

Yet, none of those issues stood out when I presented the portfolio to the class. The one part that was done well was what people remembered: the Hungry, Hungry Hippos metaphor.
With the extra thought I had put into it, I was able to craft a dramatic introduction for my portfolio, which the class loved. This one exceptional piece saved what was otherwise a lackluster portfolio. I even heard that my portfolio was used as an example for the next year’s class.

I believe that there are two main takeaways from this story. The first is that crazy ideas can work, but you have to believe in them first. The second is that time management is crucial to success. If there is anything that I have learned in my time at college, it is the consequences of poor time management. Putting assignments off till the last minute will put you in extreme situations to get everything done. When you are forced to finish your work like this, you will not be able to remain balanced.

Load Case: Spring 2013 - Balsa Wood Bridge: Complacency and Team Leadership

After the rapid changes of the fall semester, I felt far more comfortable going into the spring of my freshman year. I already had a lot of friends and acquaintances. College classes had proven to be not as scary as a lot of people had made them out to be. I also started to get into some civil engineering courses. This helped me determine that I should continue with the major.

Unfortunately, the comfort of settling in helped make me complacent. Many times first semester, procrastinating on assignments had led me to stay up late into (and through) the night. My course load was less demanding this semester, but I “compensated” for this by procrastinating even more. Increasing sleep deprivation starting wearing on me after consecutive nights of around three hours of sleep.
My laziness also translated over to UHP. This was the only semester where I struggled to get my requirements done. Were it not for a community service opportunity I participated in the week before final exams, I would not have been able to meet the minimum number of events.

The most demanding of all my assignments came from the second introduction to engineering course, ENGR 1202. We were assigned teams and tasked with creating a balsa wood bridge. The project had a “profit” versus “cost” value, encouraging groups to come up with efficient designs.

The first intro to engineering course has caused a lot of problems for a lot of people. With the randomly assigned teams in that class, many people end up in a sink-or-swim situation, where they are forced to carry the team to pass. I had the opposite experience. Each of my three teammates was skilled and hardworking. I sometimes had to act quickly in order to contribute anything at all. Each of us had much we were able to contribute, which got us through two projects successfully. This lucky stroke was a huge boost to me as I struggled to adapt to college life.

ENGR 1202 was a different story. I did not have a bad team, as two of my three teammates are still in civil engineering and are good students. Yet, no one in the group immediately stood out as a leader. Officially, we never did have a leader. I reluctantly started taking on more and more responsibility for organizing the group as time went on. This was the first leadership role I had in college and it was terrifying. I had never made a balsa wood bridge nor did I understand any of the science behind it. I now also had to set the tone for how we would go about the project. As the unofficial leader, I felt like I should know everything about the project. I started playing around with our modeling software and coming up with designs for
our bridge. Only on rare occasions have I ever confessed to having fun on a homework assignment, but I found myself enjoying the design process. It encouraged me to keep tweaking the model to improve the bridge.

My team received a scare at the mid-term. There was a smaller competition with balsa wood bridges which served as a preview for the final project. We selected the best of the designs I had worked on and built it. I was confident that it would perform well. According to the design software, our bridge should have held up to 230 pounds of loading. That number would have put us near the top of the class. However, we had not been careful in constructing the bridge. Since wood is a natural material and not standardized in a shop, some pieces are inherently more strong and stiff than others. We had not paid attention to this and had used two soft members in our truss. Almost immediately after the loading began, we heard cracking. The bridge barely made it to 80 pounds before failing to carry any more. Fortunately, we only had to hold 50 in this test to get a passing grade.

We began working on the final bridge with a far more calculated and careful approach than before. I included my teammates in the design process this time. All of us sharing our ideas together was far more efficient and effective than before. As the unofficial team leader, I did my best to make sure that we had all the tools needed and had plenty of time to work on it. I should have pushed to work earlier, as we ran up against time issues towards the end. When we finished the bridge, I was pleased at the overall construction. A few pieces of the bridge fit so well that they stayed in place before we glued them.

On the day of the competition, I was confident in our bridge. However, when we presented our design, we had one of the lowest profit margins in the class. Only one group out
of twenty in the class had a lower value than us. That surprised me, given how much work had gone into the design. Those were just the preliminary numbers and the final value would be calculated from what the bridge actually held.

One final wrinkle in the assignment was we had to guess how much weight our bridge would hold. There were penalties for overestimating and for underestimating, with the overestimating being far more severe. This may seem arbitrary at first, but in hindsight it makes a lot of sense. In engineering, one of the worst-case scenarios would be building something that has less strength than we think. On the other hand, we are preparing a product for a customer (the owner of the building), so efficiency and creating the most-cost effective design are important. Our final design had a predicted strength of 220 pounds. I wanted to estimate 200, but I let myself get talked down to 180 by the remainder of my team. We tested our bridge and it actually held 240 pounds. Despite our error in estimating, I was very proud of how well the bridge had performed. After the competition, when the final profit values were calculated, we finished sixth in the class (far higher than our predicted nineteenth place).

In STEM fields, especially engineering, team projects are an essential and unavoidable reality. Research has shown that “team leadership is critical to achieving both affective and behaviorally based team outcomes” (Stagl, Salas, & Burke, 2007). Whether there is a nominal team leader or not, the strength of the team comes from the contributions of each individual. The team’s leadership ability is known as the team leadership capacity (Day, Gronn, & Salas, 2004). For the balsa wood bridge project, I was able to take the lead and create the designs for our bridge. For us to be successful, it took me learning to incorporate my teammates ideas with my own. Our combined product was far greater than anything I could have come up with on my own.
After taking the lead on a project for the first time in college, I discovered another important point: leadership is more about desire than skill. I had little idea how to design or build a balsa wood bridge. What I had was the drive to learn and do the best job I could. To be a successful leader, you need to be passionate about the subject. Without passion, there is nothing motivating you to work hard enough to be a good leader. This is a lesson that I would use many times during my collegiate career.

Load Case: Fall 2013 - Black Mountain Photo: Confidence and Staying Active

Physically, college has not been an easy time. I have often struggled to find time to exercise. With so much going on, it takes a dedicated effort to maintain a workout routine, and I have failed to keep that up. While out running my sophomore year, I injured my shins. This pain has been a recurring issue ever since. My confidence in my athletic abilities was not at an all-time high this semester.

During the fall of 2013, I went on the first-ever UHP weekend retreat at Black Mountain. We had many different events planned including an iron chef competition, a community service activity, and a waterfall hike. The two big events were canoeing and rock climbing. Due to group size and time limits, we could only participate in one. I was feeling adventurous so I decided to head out with the rock climbing team, despite never having rock climbed before.

As we arrived at the site, I could see the mountain protruding far above the skyline. The most visible sight was the rockwall we would soon be climbing. I felt exhausted and incredibly out of shape hiking up to the climbing site. This was probably the best reminder I have ever gotten about the effects of not exercising and not getting enough sleep. We eventually made it to the climbing wall, but clearly my experience was not off to a good start.
We were in teams of three for the climbing: one person climbing the wall, one person serving as belayer, and one person serving as the back-up belayer. Due to my nervousness, I was the last person in my group to attempt the climb. It was not long before I ran into problems. There was one spot in particular that I simply could not reach. My teammates encouraged me, trying to get me to jump for the next ledge. I tried several times but could not make it. I eventually decided to go for it and gave my best push-off. To my astonishment, I made it to the next ledge. Taking another leap, I made it up further. I continued to ascend, making it to the top of the wall.

My initial failure had been a crisis of confidence. I had faith in my team that they would catch me if I slipped. The issue was that I did not believe in my own ability to make the leap. Once I decided to trust myself, I was able to successfully rock climb, which was something I did not think I was capable of doing.

Maintaining your health is a necessary part of equilibrium. I usually have found it one of the harder aspects to remember. With all sorts of different events and time requirements going on, exercising has slipped from my mind many times. Keeping up with a routine will help keep all of the other parts in college life in line. Believe in your abilities and you will be able to accomplish goals you never thought possible. Distributed leadership and the team leadership capacity is about team members stepping up to lead at various times. If you believe in yourself, you will not only be willing to step up more often, but you will also find that you are capable of leading in more ways that you previously knew.
Load Case: Spring 2014 – The Art of Happiness: Maintaining Internal Equilibrium

Not all of college’s challenges come from the classroom and the organizations. For traditional college students, it is their first time living with anyone other than their family. College life is a transitional period as people adapt to new surroundings. These changes are often for the better, but not always. One of the unfortunate truths I have found is that not all of your friends from freshman year will still be friends by senior year.

I found myself in a difficult position in the spring of 2014. Two separate problems were arising at the same time: a falling out with some of my roommates and a failing relationship with my girlfriend. In both cases, little things were starting to add up, making big problems out of minor annoyances. For example, one of my roommates would always chew with his mouth open. I always thought it was gross, but as we began to disagree more and more, it got to the point where I could not stand to be in the same room with him any time he was eating.

Unfortunately, the two problems revealed themselves to be just one problem. Not long after my girlfriend and I broke up, she began spending a lot of time with one of my roommates. I tried to remain friends with both parties. At times, it seemed like we were all still friends. For the most part, I simply tried to survive, never delving too deeply into what was going on around me. Ultimately, I accomplished little other than feeling like I was trapped in a bad situation. My room, which had previously felt like a retreat from the outside world, now felt like a cage. I left campus after the semester ended feeling broken down.

I struggled to come to terms with what had happened even once I was back home. The more I thought about it, the more I discovered new pieces of the situation, which just made me
feel angry. I found that I could not do anything except think about it. It seemed I would never be able to rest easy until I had put the events behind me.

It was at this point that I decided to pick back up a book called *The Art of Happiness: A Handbook for Living*. This book portrays the conversations between His Holiness, the Dalai Lama, and Dr. Howard Cutler, an American psychiatrist. I had begun reading the book during the previous Spring Break but had not finished it. I happened to resume at just the right point in the book, where the Dalai Lama speaks of “my friend, the enemy.” In this, he discusses how we can learn patience and understanding from those who we normally consider “enemies” in our life. Here is one of my favorite passages from the book:

> In Buddhism in general, a lot of attention is paid to our attitudes towards our rivals or enemies. This is because hatred can be the greatest stumbling block to the development of happiness. If you can learn to develop patience and tolerance towards your enemies, then everything else becomes much easier—your compassion towards all others begins to flow naturally.

> So, for a spiritual practitioner, one’s enemies play a crucial role. As I see it, compassion is the essence of a spiritual life. And in order for you to become fully successful in practicing love and compassion, the practice of patience and tolerance is indispensable. There is no fortitude similar to patience, just as there is no affliction worse than hatred. Therefore, one must exert one’s best efforts not to harbor hatred towards the enemy, but rather use the encounter as an opportunity to enhance one’s practice of patience and tolerance.

> *In fact, the enemy is the necessary condition for practicing patience.* Without an enemy’s action, there is no possibility for patience or tolerance to arise. Our friends do not ordinarily test us and provide the opportunity to cultivate patience; only our enemies do this. So, from this standpoint we can consider our enemy as a great teacher, and revere them for giving us this precious opportunity to practice patience (Dalai Lama & Cutler, 1998).

I tried my best to absorb the practices of this book into my own life. It was not an easy transition and I sometimes still struggle to maintain some of the ideas. It definitely helped me calm down that summer and take a new outlook on what had happened to me. From there I was able to move on and start working towards forgiveness.
Today, I am at peace with what happened. For some of the people involved, our friendships have not fully recovered. I am not sure that it would be for the best if they did. Relationships are always changing and sometimes people just are not compatible anymore. There are few lessons more difficult to learn than that. Sooner or later, everyone will have a situation where a friend or a significant other ends up on bad terms. Learning how to balance out that distraction is just as important to a successful collegiate experience as coursework. Find what makes you happy and will let you be at peace. Then you will find that it is far easier to accept the choices of others. Without mental stability and an acceptance of others, balance will be difficult to come by.

**Load Case: Fall 2014 – Crisis Assistance Ministry Photo: Leadership and Service**

I returned in the fall of 2014 with a new attitude and drive. My summer revelations had changed me in many ways, not the least of which was inspiring me to work harder for my courses. While the course load ramped up in difficulty this semester, I was better prepared than ever before to tackle it.

That is not to say that this semester did not bring any increased challenges. One area that did become far more difficult was in my extra-curricular activities. I had served on the UHPSA executive board the previous year as Secretary. I was now the President-Elect, a two-year term where I would spend one year as President-Elect and the next as the President. My main two responsibilities in the first year were being in charge of community service for the UHPSA and shadowing the current President. This was a big step up in leadership for me and I had to learn a fair bit on the job to step into the role.
Finding community service work is far harder than most people imagine. Of all the places to volunteer, very few will respond to emails or even phone calls. Scheduling becomes very difficult with this. Service organizations are often so full with volunteers that you cannot get a shift within six months.

One of the few community partners we have had good luck with is Crisis Assistance Ministry. Crisis helps individuals and families in financial need with clothing, household supplies, and in some cases, financial assistance. I have always enjoyed our time there and they have been very easy to work with in setting up dates.

In 1970, Robert Greenleaf proposed a new theory of leadership known as servant leadership. He wrote that, “Servant leadership begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead…” (Greenleaf, 1970). Building further on this, Greenleaf (1970) wrote that servant leadership “values community because it provides a face-to-face opportunity for individuals to experience interdependence, respect, trust, and individual growth.”

This theory represents what has motivated me to step up and take leadership roles. Leadership provides many more benefits than just making a resume look better. The reason to step up is the desire to make a difference in other people’s lives. I have become more involved because I believe in my own ability to help others. My belief is two-fold: helping people in need as well as helping build community amongst UHPSA members.

This photo demonstrates both of these aspects. In the picture, we are volunteering at Crisis Assistance Ministry, helping make a difference for people in need. I am also taking a silly pose in the picture, trying to make those around me laugh. I have always felt that hard work and
having fun can not only coexist but are mutually beneficial. If I can improve the time that my fellow members are having, then they will have more energy to work. Then I will have made new friends who will be willing to help me other times.

Taking on leadership positions can be a tough challenge to balance. Those who are driven to serve are often already busy with other commitments. I believe that these positions are necessary to achieve growth. A leadership role will teach you about the difficulty of organizing events, making you more sympathetic to those who do it elsewhere. It will also help you realize your own leadership style and passions. You will then be able to focus on what matters to you. Each person must find their own path to equilibrium and one of the best ways to find out what matters to you is to take on leadership roles.


The most common challenge any college student will face is academic work. Since senior year of high school, my goal has been to become a civil engineer. My specific area of interest is in structural engineering, which is the field of designing supporting structural systems for buildings, bridges, and other large objects and utilities. Since the structures we create could, in the case of a failure, cause tremendous risk to the public, there is a great need for academic rigor and certification in the field.

Two of the most challenging courses I have taken were the first and second structural steel design courses offered. Steel design involves a multitude of checks on limit states and failure modes, with relatively strict standards on design. Both courses had weekly homework assignments. These could be grueling, especially in Steel 2, where I spent up to fifteen hours
finishing an assignment. All of our exams for the two courses were closed notes (a rarity among upper-level civil engineering courses).

The one tool we had at our disposal was the American Institute of Steel Construction’s (AISC) Steel Construction Manual, 14th Edition. A few of my friends and I affectionately nicknamed it the “steel bible,” due to its size, thickness, and red cover. Metaphorically, it proved to be just about as important to our courses as a religion’s holy book.

The first fifteen sections of the manual consist of various tables providing valuable information for different conditions. Chapter sixteen consists of AISC’s steel design specifications, where most of the governing equations are found. The remainder of the book consists of commentary on the specifications and appendices.

In order to successfully balance the coursework I received in these two courses, it was crucial that I be able to easily use the steel manual. It became increasingly difficult as we covered more topics to remember where the information from each lecture was located. I began using sticky note tabs to mark important information. My steel manual now has no less than 35 of these tabs in it. I owe a good portion of my test scores to that system, as it allowed for rapid navigation between the chapters and tables.

The other main tactic I used to balance out the load of these courses was far simpler: hard work. Sometimes, there is no other choice than put your nose to the grindstone and get what you can done. I have long known that I am a natural procrastinator. Once, I proudly named myself the “master procraster,” as I was always able to put school work off but still manage to get it all done eventually. Since my sophomore year, I have fought this instinct as often as I could. I still struggle to start working early on assignments to this day. With the time commitment required
from these courses, my choices were either to put the necessary time in or fail to complete everything. There were many times when I lost out to my old habits. I spent a lot of late nights and early mornings compensating for my lack of time management. However, I am proud of the fact that I turned every homework assignment in on time and never received less than an 80%.

Any successful college student will have academic work as their number one priority. If this load cannot be balanced and resisted, then the whole model of a student collapses. Working hard and working early are huge components to this. Those practices will eliminate many stresses down the road that can derail your equilibrium. I think it is also crucial to have faith in yourself. There will almost certainly be times when you are behind and you will need that trust in yourself to not panic and to get work done. The last part of balancing academic challenges is to know the tools you have in your disposal. If you have access to an aid such as the steel manual, it benefits you to know it well and how you can best utilize it.

**Load Case: Fall 2015 - Fundamentals of Engineering Exam: Testing and Accomplishments**

Senior year arrives faster than you would ever think possible. I remember looking back at the start of that semester and just being amazed at how much had happened in a short time. That said, senior year is not just a time to look back. My senior year has been the busiest by far. For this semester, I was in Steel Design 2, Advanced Structural Analysis, and Geotech 2, which are all three 4000/5000 (senior/graduate) level courses. I remember joking that Steel Design 2 was actually a part-time job, considering we often spent up to fifteen hours a week on work for the class. The other two courses were nothing to laugh at and provided plenty of additional challenges. Combined with this, I had now become the President of the UHPSA, and I also took on roles as the Treasurer for Chi Epsilon, and Community Service Chair for our school’s chapter.
of ASCE. I have done my best to give these positions the attention and dedication they deserve, but I know that there have been many times where I have failed to meet that. I needed every trick I have learned with time management in Fall 2015. One of my favorite ways to organize was to keep a detailed planner with all of my assignments. From there, I would set goals for each day, such as “get two out of the four homework problems do today.” This way, at the end of the day, I could look back and see how much I had accomplished, rather than just looking back and seeing how much I had to do.

There was one additional challenge that was the most daunting of all. Ever since I started in the engineering program (and especially in civil), I have heard about the importance of the Fundamentals of Engineering (FE) exam. The FE is a six-hour long exam with 110 questions, split into a general engineering section and a discipline-specific (civil for me) section. The North Carolina version of the test is prepared by the National Council of Examiners for Engineering and Surveying (NCEES) and administered at Pearson VUE testing centers. Passing the FE, along with getting an engineering degree, are the first steps in the process of becoming a registered Professional Engineer (PE). Many students take the FE their final semester. Several factors convinced me to take it a semester earlier. The first reason was that it would allow me to focus more heavily on my Senior Design project and Honors Portfolio in my last semester.

Secondly, I was taking the class Professional Development this semester, where specifically civil students were required to attend an FE review session. I decided that the most beneficial plan was to take the exam right after finishing the course. Lastly, many of my civil engineering friends were taking it that semester, so there was some peer pressure to go ahead and get the FE out of the way.
On Saturday, November 21, 2015, one of my friends and I left campus to head over to a Pearson Testing Center. We were the first car to arrive in the parking lot. One of my other friends arrived shortly thereafter. We waited around fifteen anxiety-inducing minutes before any of the employees showed up to unlock the door. The testing center had many different rules that we had to cover before we could begin the exam. Almost four years of preparation had gone into this moment. I was able to finish the exam in about five hours and forty-five minutes. Walking out, I was confident that I was going to pass and proud of all that I had accomplished.

The truly joyous occasion did not occur until the next Wednesday, November 25. I received an email that the test results were in. In anticipation, I logged into my NCEES account and saw the notice that I had passed. The FE had always been a looming weight behind my college career, but now it was done. I remember feeling excited, proud, and extremely relieved that day.

While an incoming freshman may see senior year as far away, it does approach faster than you would think. Eventually, you will reach the end-goal, whether that is a test like the FE or something else entirely. We often spend our time going from assignment to assignment, but when you look back, you will be surprised how much you know. For me, I saw four years of studying pay off in the form of certification. With this accomplished, it has greatly increased recruiters interest in me. While other fields may or may not have a similar test, there are plenty of opportunities to show all that you have learned. One way would be to create a portfolio and reflective essay like this one. These types of assignments show just how much you have learned and grown from the loads in your life. College is a demanding time, but a balanced approach leads to great rewards.
Conclusion

Eight semesters can go by in such a hurry. It seems as if you walk in as a freshman one day and then are ready to graduate the next. While the individual days may seem long, it is shocking to see how quickly time has passed when looking back. In your four college years, so much will happen to you that it becomes difficult to remember it all. I have presented seven stories, but they are just a fraction of all that has happened during my time at UNC Charlotte.

For myself and every other college student I have spoken with, there is one question that we all ask ourselves at some point: “Am I doing the right thing?” It is natural to question whether or not we are in the right major, the right organizations, or even the right state of mind. I have debated this with myself countless times during my four years, analyzing each aspect of my life to see if it matters to me. There have been many times where I thought I should have been in a different major or not gotten involved with several different organizations. I have certainly questioned my tendency to procrastinate. Combining STEM, honors, and leadership has often been difficult, with each one demanding large amounts of time. The challenges add up and can overwhelm you. It is crucial to efficiently divide your time between these loads. You will then be able to remain balanced.

If I could go back to where it all started, I would do it all over again. With each new load that I have taken on, I have been surprised by my ability to balance it. As the loads have increased, so has my strength. This has kept me balanced in my goals of becoming a civil engineer and being a leader. The diversity of challenges has aided my resiliency and helped me become a more well-rounded person.
For incoming students, I can sum my advice for you down to one word: adventure. Be bold in seeking out new opportunities and finding out what is important to you. Once you know your values, you can develop goals to achieve that which matters to you. You can then seek to balance out the loads these goals require. As you take on more challenges, you will be able to overcome them and grow into a stronger person. College is a time to find out who you truly are and that is very difficult to do without pushing yourself. Overcoming these challenges and finding your equilibrium will lead you to success and happiness.
References


