



## 0 to 100

MY PROCESS FOR BECOMING A WORLD-CLASS ENGINEERING  
STUDENT

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## 1. Introduction

The world class engineering student is no different from a world class student; he or she just has a different load of classes. The material we go over in class and read in the book is generally geared towards students fresh out of high school and transitioning to college courses or students who have not learned how to be successful yet. Since I already have a significant amount college credits and have already adopted many of the strategies to be successful I will not be following the template religiously. I do, however, try to identify areas where I can improve and list ideas of how to do it.

No matter how good I become at something there is always room for improvement.

## 2. Goals of Engineering Education

### CLEVER SUBTITLE

The obvious goals are obvious so no need to detail them. Specific goals are worth talking about though. A good one to start with is what kind of GPA I wish to graduate with; 3.6 or better is what I am currently targeting and I am on track to obtain it. With over 160 college credits I am at a 3.7. Also this term I am on the way to get all high A's; when I checked on how I was doing just before leaving for thanksgiving break the lowest percentage in a class was 97.

Another goal is to complete this education with as little debt as possible which means getting internships, scholarships and any other type of financial aid available. One problem I will run into with financial aid is that after this year I only have half a year's worth of Pell Grant left so at minimum there will be one year with no grant money and up to a maximum of 3. I will need to obtain a lot of scholarships if I want to complete my education with minimal debt.

In order to make it as easy as possible to win those scholarships not only do I need to perform well in class but I also want impressive associations, recommendations and awards. Having a job at the tutoring center is a good start towards both achieving awards and having great item to add to scholarship applications. Joining ASCE as an officer with two positions will also aid in obtaining scholarship money. Last but not least is feeling comfortable (meaning I know they will speak highly of me) asking nearly anyone I take a class with for a letter of recommendation.

All goals which I listed that can aid with obtaining scholarship money are more important as personal accomplishments/growth rather getting money.

### 3. Commitment to Success

#### UNSTOPPABLE FORCE MEETS THE IMMOVABLE OBJECT

First things first; I would not be here if I wasn't committed to succeeding. I can understand this section being a part of this paper because there are so many that don't take their education seriously. Perhaps after writing about their commitment to success they will reassess where their priorities are and take their engineering education more seriously. Then again, maybe they will realize they aren't cut out for school or just have priorities in other places, in which case they could put their effort where their motivation lies. After all, last time I checked, the first year retention rate at OIT is something like 60% and I suspect it is far lower for the Engineering disciplines.

My commitment to success is absolute; I have the motivation and the attitude to succeed and I've also got the confidence. One of the primary motivations I have to succeed in my studies are what opportunities will be available to me if I am unable to succeed. I am not fresh out of high school and most of the employment I have had was self-employment, low paying, or dead end. Being older than the average student with no history of good employment leaves me in a fairly desperate position if unsuccessful; possibly a large debt from loans, no real ability to obtain a well-paying job and not much promise for a secure future.

In most cases the catch 22 is always bad, the most common one of course goes like this: Employer to applicant "I can't hire you because you don't have the right experience." to which the applicant replies "well, how can I get experience if no one will hire me." We've all heard that catch in one form or another but we don't often think about success being its own reward, the idea that success in one area of life can translate to success in all parts of life.

I am the type of person who is never satisfied but easily entertained. The way it translates to commitment to success with the idea that success is its own reward is; I am able to take on nearly any task or course and find entertainment and enjoyment from it. On top of that, stress and responsibility that can lead to positive things never adversely affect me, exactly the opposite actually I tend to seek out more.

So far I have never overloaded myself, though I did neglect my personal life for a time when I had **every** day of the week loaded from the time I woke up until the time I went to bed. It never felt like I was overloaded and for a long time that phase of my life felt like the most productive years in terms of intellectual and personal growth. When I look back on it now though I realize there were areas of neglect. I fully intend return to that feeling of full productivity but this time without the neglect. I do so by insuring adequate time to develop personal relationships, participate in activities that further both goals (personal life and productivity) and keep an adequate amount of time free for personal use/play at least 1.5 hours per day on week days and 3-5 hours on sat/sun.

## 4. Dealing with Adversity

### MY HOME IS IN THE DELTA

Without going into too much detail, in my opinion, I have dealt with more than my share of adversity. I'm not even sure adversity is the correct word for it, more like horrible choices, misplaced priorities and wasted time.

Drug and Alcohol abuse, depression, isolation, criminal history are the things I have had to deal with. While drug abuse and criminal behavior was only a relatively short period of my life when I was much younger the consequences of having a felony on my record will last forever. Alcohol abuse was a problem on and off from the time I was about 16 with a 7 year period of abstinence from 24 to 31. Depression and isolation lasted much longer starting from the time I was 31 until just after turning 37.

In general I try to be positive but it's difficult to find anything about those "adversities" to be positive about. I suppose one is that I actually pulled myself away from them and am doing something good now. When I say "I pulled myself away" it was done through willpower alone, I never got help to do so; I can also be proud of that. It probably would have been much easier to change if I had gotten help though so who knows whether that's a positive or not.

I keep a constant watch on where my state of mind is to insure I never backtrack to where I was several years ago and have people to talk to about it now.

## 5. Managing Personal Life

### ALL WORK AND NO PLAY MAKES JACK A DULL BOY

Managing personal life ties in closely with time management. In my experience with managing personal life it's usually an issue with spending too much time on personal affairs and neglecting course work, though the problem of neglecting personal life and spending too much time on work/school can happen.

Ideally I will be able to maintain a good balance between time spent on school and personal life so as to be successful in both areas. For the most part I believe I have achieved that balance, I always have some time during the day for personal time and play time without neglecting any school work. I also have ample time to pursue activities which foster improvement in both personal and educational enhancement.

Coming to Klamath Falls in September to live was a complete change in environment and had only been here one time before the move. I didn't know anyone in Klamath Falls but part of my decision to come to OIT is that it is reasonably close to Grants Pass, where I moved from. Since OIT is so close to home I can easily make the 1.5 hour drive on a moment's notice to visit family (mom/uncle/aunt) and have made the trip twice already.

Living on campus was one of the best choices I made when coming here. The required meal plan for first year students living here does not provide outstanding meals and I could easily feed myself with better meals for about half of what the meal plan is. While campus housing is quite a bit more expensive than what I would pay renting a room being right on campus is fantastic for opportunities to participate in any event that takes place on school. Also, having gotten lucky with my room assignment and 3 good roommates I have already met and made quite a few friends here.

One area of my personal life which I would like to improve on is knowing my extended family better. My mother has 4 brothers and 3 sisters and all of them have between 1 and 5 children of their own many of them have children as well. What it comes down to is that I have something like 40 cousins on one side of my family and only really know a dozen of them. There is a strong possibility that I will be able to get an internship with the company my cousin Diana works for. Not only will it be a great opportunity to further my education and future career goals but where she lives is also where many other family lives, and at least 2 of the cousins who live in Ohio, where the internship will be, are Civil Engineers, how perfect.

Overall I am doing well managing personal my personal life, the main thing I need to continue to work on is forming healthy relationships that will last throughout school and into the future.

## 6. Attitudes

### 42 – LIFE, THE UNIVERSE AND EVERYTHING

Most important as attitude relates to the world class engineering student are; time, class and coursework, failure and internal attitudes. How do I view the time I spend at school? How do I approach classes? In what way do I look at failure and how will I deal with it? What is the view with which I see myself?

Time: Attitude of time may seem like a strange value to place among the most important attitude. How can an attitude of time be so important? As speak with others studying to be engineers, or, indeed any of the programs offered at school there seems to be common theme of, "I can't wait until the term is over." or "I wish I would just be done with school."

When I think on my time in school the general attitude I take is, "how can I get the most out of every minute I spend here?" and "wow that term went by insanely fast." I am not looking to speed through school but I also have to be realistic and do need to finish my degree in a timely manner. While I can't afford adding an extra year to tackle coursework at a leisurely pace I can enjoy the time I do have and work relentlessly to make sure that attitude never changes.

Class and Coursework: When I see people in class bored, playing on phones or other devices, talking, or napping I wonder how they can waste their (parents) money like that. This education is not cheap and I intend to get every pennies worth.

Information that we want to hear is easy to remember because the subjects that have that information is from classes that we enjoy. What about those classes we don't enjoy? The real trick is to be able to find enjoyment in all subjects. It is nearly impossible to change likes and dislikes but it is possible to take action to change an attitude. The book we used in ENG101 went over several strategies; sitting near the front of the class, having positive interactions in and out of class with professors and not procrastinating on work from those classes. For the most part I already employ all of those strategies which to help some. Other strategies I have adopted to change my attitude towards classwork I may not like is be able to discuss those subjects with enthusiasm and teach what I've learned to others; be it to family/friends or to other students who need help with that subject.

Failure: Having a positive attitude towards failure is essential to being a "world-class engineering student", so much so that there is an entire section titled dealing with adversity which just as easily could have been dealing with failure. Failure is going to happen but I can't allow it to hold me back, I have to treat it similarly as a fear, overcome it and move on.

I have recently had experiences with two other students who have had their first real taste of failure when it comes to coursework. One handled it well the other didn't. The first failed by his own fault, he neglected a class for the first month and was never able to catch back up, because of his failure he's now considering leaving school and is pretty depressed. The second is also extremely upset about being unable to be successful, one big difference is that the class was simply very difficult and even though she was (barely) passing the class she didn't know the material well enough to continue to the next class so she is retaking it.



## 7. Teaching and Learning

### DO AS I SAY NOT AS I DO

Strengths in Learning:

First I am able recognize patterns almost instantly and apply information to those patterns to solve problems easily. What this means for my learning is that once I understand a process of how to do something I rarely have a problem coming to a solution using that process or a variant of that process.

Second big strength would be grasping concepts. Similarly to recognizing patterns I am able to see the big picture of a concept almost immediately, break that concept down into individual parts and see how each part fits into the whole.

Third strength would have to be the approach or attitude I take towards education. I always have a positive outlook on every subject and aggressively seek to test my understanding of the content. Tests and quizzes aren't stressful because of this; they are simply a way to gauge my understanding of material and a basis for where I may need to put more effort.

Weakness in learning:

Because I generally understand things easily when it takes a long time to understand something I can get frustrated. While I'm sure everyone does get frustrated when unable to understand mine can become unproductive anger. When I realize that I am getting to that stage I can take a break to calm down or simply recognize where I'm going and talk myself down.

Teaching:

Getting the most out of a class regardless of how it was taught has never been a problem. I vividly remember beginning a class and the first day of class every other word out of the professors mouth was "uh" and was immediately worried it \*uh\* would \*um\* be a terrible class. After \*uh\* that first \*um\* day introducing herself and \*uh\* summarizing what we would be \*uh\* doing, she started \*uh\* teaching the material and that second day even though \*uh\* there were still a whole lot of um's and uh's I knew she was presenting the information well. I actually remember her as one of the best teachers I've had.

What exactly was it about that class and her teaching style which made it so good? It was a summer class so the timeframe was shorter than normal but she always had time explain or do an example problem if a student was having problems. Usually on the first time she explained it the student having a problem would understand it and everyone else would get what we were learning reinforced.

I always find things that I like about why my professors do or turn their quirks into a game and focus on that. Everything about a class is a little better when I see the people who do the teaching positively. By the way, I really liked how you put nearly everyone in lab on the spot at one time or another and made them speak up.

## 8. Success in Coursework

### BRINGIN' THE "A" GAME

"Studying Engineering" outlines quite a few different ways to assist students with success in coursework. Chapter four is almost entirely dedicated to being successful in coursework and is titled "making the most out of how you are taught."

This book really is aimed at students who are in their first term outside of high school since one of the sections in chapter 4 is about using the course syllabus. As far as I can remember I've been using syllabi since the first time I set foot into a college class; since it is the guideline for the entire term, the syllabus resides as the first page of every subject's binder and is referenced often.

Acquiring textbooks and other materials is another of chapter four's subjects. This section recommends buying books before a term starts to get a head start on the subject and that is something I have never done or considered. I always have books by the first day of the term so I'm not a slacker but it does make sense to get a head start. Chemistry and Calculus books I already have for next term so I'll already have those books early however I could pick up Statics and Physics and see how that works out during Christmas break. If I feel like it's a good strategy I will adopt it full time; who knows I may find that I can learn some subjects without even taking classes on them.

Sitting near the front of class is another strategy discussed and one I have been using ever since I first learned something so simple tends to correlate with better performance in coursework.

Tuning people out and poor listening skills were a real problem for me when I was younger so I enjoyed the section on that subject and just how far I have come. Here is the table from the book on listening skills:

Poor Listener	Good Listener
<b>Tunes out uninteresting and boring topics. Turns off quickly.</b>	Works at finding value in all topics. Listens to discover new knowledge.
<b>Tunes out if delivery is poor.</b>	Judges value of the content rather than the delivery.
<b>Listens for facts and details.</b>	Listens for central themes. Uses them as anchor points for the entire lecture.
<b>Brings little energy to the listening process.</b>	Works hard at listening; remains alert.
<b>Readily reacts with opposing views to new ideas. Starts listening to themselves when they hear something they don't agree with.</b>	Focuses on understanding completely rather than coming up with opposing views.
<b>Bothered by distractions.</b>	Fights distractions; ignores bad habits of other students; knows how to concentrate.
<b>Resists difficult material; prefers light recreational material.</b>	Welcomes difficult material as exercise for the mind.
<b>Interrupted by emotionally-charged words or ideas.</b>	Does not get hung up on emotionally-charged words or ideas; listens with an open mind.

<b>Daydreams and lets mind wander off with slow speakers or gaps in presentation.</b>	Uses extra time to think more deeply about what the lecturer is saying; summarizes what has been covered.
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It is a shame the book does not suggest ways for students to become better listeners since being able to process information from lectures is such a valuable tool. My switch from poor listener to good listener was unintentional; a job I had which had several hours every day of monotonous, boring work which was done alone was nearly impossible to bear. To combat the boredom I started listening to talk radio. Talk radio was a great tool to improve listening skills; quite often the delivery would be poor, the views expressed were often opposite of my own and laced with emotionally charged words, sometimes it would be boring, but it was also very educational with topics enormous in scope with detailed scenarios.

### **BUT WHERE AM I?**

Since I first got serious about my education, I believe two terms after I began at community college I have only received one grade below a B and that was because I forgot to withdraw from the class. It looks as though this first term at OIT is going to be all A's. I am confident that I will maintain a high GPA throughout this engineering education.

## 9. Time Management

### WHERE DID IT ALL GO?

Mismanaging time is far too easy when there is so much when there is just so many different things assaulting every sense and demanding attention. From all the various gadgets and internet distractions to one event or another hosted on campus or by associations connected to my major. Some are important some aren't and it's very important to distinguish between the important and unimportant or be doomed to take too much time from my main priority at school; to get a quality education and to be prepared for the career I decide on.

I am generally quite good at deciding where to spend my time and where not to spend time. Rarely do I feel rushed or overburdened with scheduled events because I am able to use time on the things that are important but not urgent. Sometimes there are events which fall into the category of important but not urgent that conflict with a similarly classified event and I have to choose one or the other. How does one decide on which activity to participate in when such conflicts arise? Easily, do whichever is more important or has greater significance to my primary goals.

When it comes to actually managing time through days and weeks, in general, I keep track of everything mentally and while I've become adept at keeping track of everything requiring attention that method relies on an imperfect memory. Having an imperfect memory is a difficult thing to say for one such as myself who demands perfection wherever possible. The truth is, though, if I were to have an hourly schedule for every day the "spare" time available could be put to much better use and I would likely find spaces for more of it.

Since coming to the realization that I could make better use of time by planning my days I have acquired one of the free planners available from the school to mark important events. Unfortunately I rarely use it since the kind of events I would enter into the planner are the kinds of things that I am able to remember on my own. So it seems that plan of action is a bust. What I have started to do is use the hourly schedule available through the book and while making good use of it has the potential to increase efficiency of time usage, it requires time to fill out and manage and energy and effort to remember to and force myself to use.

Over the course of this term I have reflected a lot on how I use my time and what I spend it on and have made several adjustments accordingly:

- a. Within the first couple weeks I found that I wasn't exercising regularly as I would have liked. Instead of trying to squeeze a workout in where I could find time during a day I simply started my day earlier and have been getting it out of the way before the rest of my day begins.
- b. For a while, when there was work for a class I wanted to have done but wasn't able to finish that day I would feel guilty for not completing it. The guilt could get pretty bad if some of the time during a day was taken for me. Everyone needs personal time, though and I refuse to feel guilty for taking some. To alleviate that guilt I rearranged my schedule to insure at least 1.5 hours at the end of every class day was personal time and done in such a way to give ample time for study.

## 10. Teamwork and Leadership

### RESISTANCE IS FUTILE

Personality tests, the ones we did for this class and others I have taken throughout my life, have always pointed towards traits of leadership. Until the one taken for this class I had always dismissed them since none of the other aspects of their results resonated with me. This one was different; I did notice quite a few of the other traits I could identify with.

The results got me thinking, in particular, about leadership behavior and how it relates to me. I do always seem to gravitate towards areas of leadership. One of the first things I noticed when I got to OIT was the weekly leadership training group, joined it the first week and participated every week since. When I joined the ASCE campus club and found they were looking for officers there was little hesitation to take on two of the open positions.

Beyond a simple desire or gravitation towards leadership positions I also just naturally take on that role whether I want it or not. Nearly every group project for a class people look to me to make decisions, delegate responsibility, or clarify the needs of the project. But why am I so easily seen as a leader by others?

Here is a list of possible traits that may have others see me as a leader:

1. Ability to make decisions quickly and confidently.
2. Keeping track of most of what goes on with a task/project and being able to recall that information easily.
3. Accepting responsibility for both failure and success with a level head.
4. A willingness to take on a role of leadership.

These are just some traits which I think contribute to naturally taking on leadership roles. Taking on those leadership roles doesn't just apply to the educational environment though it has always been that way from sports groups to online gaming I am either asked to lead or just assumed to be so.

To conclude this section I wanted to take a moment to write about a couple of areas I am currently working to improve. The first being group study outside of the classroom: In general I do most of my study alone in the library or up in the tutoring center. Based on the reading we did in this class students who do participate in group study tend to do better in class and I have been actively seeking out opportunities to do so. So far I have done at least 5 this term but where I am at in coursework it doesn't seem like many are open to that sort of study. The ones who are open to it generally don't understand the material so I end up teaching the material and the assignment takes significantly longer than it should.

Being able to teach the material certainly helps me to learn it better but I am also hoping for some study groups to be more of a two way street where participate equally and everyone learns to understand the material better.

## 11. Co-curricular Activities

### ASCE – MEMBER/OFFICER

Asce.org was one of the first websites added to my favorite's folder titled "Engineering" after deciding to pursue a degree in civil engineering. What I found there was nearly anything I wanted to know about civil engineering and how it related to me; from internship postings, to career paths, salary outlooks, and code of ethics, student organizations and their competitions. The previous list of available resources barely scratches the surface of available information from the American Society of Civil Engineers.

Coming into this field of study I had only a general idea of what it was and where it could take me so the "Career Paths in Civil Engineering" (<http://lnk.nu/asce.org/2qsa.pdf>) was particularly interesting. Of the five career paths listed consulting, industry and construction paths are the three that I gravitate towards here at the beginning of my engineering education.

In the construction path I would be able to utilize some of my previous education in design and the enjoyment I had doing home improvement and other construction jobs, on a much larger scale. Starting from entry level engineer, moving through project management and beyond would fit well with my strong organizational skills, good eye for detail, and the ability to excel in high stress/high responsibility situations.

The industrial path really appealed to me because of the idea of sustainable processes and a small environmental footprint. While I have never been much of an environmental activist, the pillage and rape we (humans) have done and are doing to this planet is disgusting. It would be rewarding work to take part in the design/development of a process reducing the destruction we inflict.

The consulting path offers nearly unlimited potential and the option to be a part of a large or small firm or even starting my own business. "Regional Business Management", "Executive Senior Management", "Regional/Global Director" are just a few managerial job titles listed under the consulting path and I am already starting to prepare myself for the possibility of a leadership position; every Wednesday attending leadership meetings and also plan to join two campus clubs (ASCE, EWB) with the possibility of taking on an officer spot.

Somewhere down the line I may find an affinity with the Government path, I have a pretty good mind for policy. With my campus job in the LRC as a tutor I may find a love for teaching which could lead me down the Education path. Even with an initial preference towards 3 of the 5 career paths all 5 are still wide open. As I learn more about the field (civil engineering) I'll narrow my goals and plan so when I finish my degree I can be as confident as possible the path I choose will be rewarding, satisfying, and worth doing for many years.

## 12. Respecting Differences

### TRADING PLACES

Since when did the idea of a melting pot become offensive and why is that the case? The idea of the melting pot was never about being the same or even striving to be the same. That idea was about the sharing of culture, background and history for the growth of everyone. No matter how offensive the idea of a melting pot may be it is happening and will continue to expand as people of all nationalities spread out around the country. We will all be better for it, I know I am.

Where I grew up is one of the most multi-cultural areas in the country, I believe, and because of that I have a great respect for those different from myself. Albany, California is the city; right next to Berkeley and about 3 miles from the Bay Bridge leading to San Francisco. In all of my schools there were really no minority's all nationalities and races were all equally varied as were my and my brother's friends. The whole idea of treating people differently because of eye shape, skin color, beliefs, or religious practice is a foreign concept.

The women in my family, for the most part, are extremely successful. They are well educated and hold prestigious jobs they are corporate executives, educators, doctors, executive directors, stock brokers, investors and even home makers. Yeah, I can certainly respect gender difference.

### COLLAPSE

There isn't too much more to say on respecting differences so I'll finish out this section with a little story. I was living down in the Bay Area when the earthquake hit that collapsed a section of the Bay Bridge and it's something I will never forget. The collapse of the bridge isn't why I won't forget it but video we watched several weeks ago on the deconstruction of the old section was pretty fascinating. No, the reason I won't forget that earthquake was because of everything else that surrounded that quake.

Earthquakes were a fairly normal occurrence so when it started my friends and I just kind of ignored it and went about our card playing but it quickly became apparent that it was no normal tremor. It only lasted for about 10-15 seconds but afterwards it seemed like my house was part of a swing set for several minutes. Within minutes the news of what damage it caused started coming out.

Collapse of the bridge was the big news but the 880 collapse was of similar magnitude and where many of the fatalities and injuries were. While I wasn't a big fan of watching baseball having the Giants and A's (Battle of the Bay!) in the World Series was a big deal so we were all going to watch it including my Mother. She took the 880 to get home from work! My fascination with the damage quickly changed to dread when I realized the freeway she took home from work was flattened. Even worse was calling her work to find out she had already left. Not too long after she called to let us know everything was ok. Whew!

## 13. Health and Wellness

### HEALTHY BODY, HEALTHY MIND

Health and wellness covers the entire spectrum of things which affect a person's ability to function at full capacity, from spiritual well-being to getting sick. I'd say I'm pretty healthy; I rarely ever get sick, get a good night's sleep, get plenty of physical exercise, and eat well. So there isn't all that much to say. Maybe I drink too much coffee, I have my morning cup and maybe another during the day. I'm not going making any plans to cut back at the moment. Smoking is definitely a problem but I'm not sure that I can quit and at this point I'm not really sure I want to.

## 14. Benefitting from University Resources

### THE CAKE IS A LIE

<b>University Resource Listed in the book</b>	<b>I use it</b>	<b>I don't use it</b>
<b>Tutoring (LRC)</b>	I use it and I am one.	
<b>Recitations/Problem-solving Sessions</b>	Go to every one available	
<b>University Library</b>	When done with class/work I study at the library until it closes every night.	
<b>Academic Advising</b>	Use it and am proactive about insuring there are no unexpected roadblocks with classes.	
<b>University/college catalogue</b>	Yes	
<b>Registrar's Office</b>	Yes	

The previous table contains only the university resources listed in the Studying Engineering book. In addition to those resources I also visit the Integrated Student Health Center if needed. There is also a campus life, housing, admissions; I'd even go so far as to say Sodexo's office as a student resource, seeing as how I'm stuck with this meal plan as a first year student living on campus.

One of my primary goals of this education (which I conveniently left out of "Goals" for this section) is to take advantage of everything offered and I do. I actively seek out opportunities to take part in, but need more time in order to accommodate everything I wish to do.

Actually about the only thing I haven't signed up for which is a university resource is the TOP program. I am somewhat conflicted about signing up for that program; it seems to be primarily directed towards non-traditional students who have difficulty with classes or low GPA. One of the qualifications though is also low-income which could really help me cover the price tag so maybe I should sign up for it.



## 15. Occupational Outlook

Outlook for the engineering professions as described by the Occupational Outlook Handbook is the expected growth over a ten year period (2010-2020). Expected growth of an occupation is compared to the growth of all occupations for categorization against the average. Other easily available information for an occupation include; entry-level education, number of jobs in 2010 and the expected additional jobs by 2020, 2010 median pay, if the occupation requires on the job training, and whether work experience in a related field is needed. An in depth exploration of an occupation reveals a large amount of demographic information.

Finding the outlook for engineering occupations as a whole slightly lower than average was quite a shock, I assumed growth for engineers would be much higher than average. The average growth for all occupations is expected to be 14% between 2010 and 2020 while engineers' growth is estimated at 11%. The categories of growth found for engineering professions are: little to no change, slower than average, about as fast as average, faster than average, and much faster than average. Engineering professions growing slowly are aerospace, agricultural, chemical, computer hardware, electrical, industrial, and materials engineers. Engineering professions growing at an average pace are civil, health/safety, marine/naval, mining/geological, nuclear, and petroleum engineers. Engineering professions growing quickly are architects, geomatics (cartography, surveying, and photogrammetry), and biomedical engineers.

Median income for engineers is much higher than the average for all occupations, a good deal higher than I assumed it would be. Average median income for all occupations in 2010 was \$33,840 while median income for engineers was \$83,340, well over double the average pay! On the low end of the median pay scale for engineers are the cartographers/photogrammatrists earning \$54,510 and petroleum engineers on the high end earning \$114,080, my chosen field of study civil engineering earns \$77,560.

Demographic data for civil engineers can be found at <http://www.bls.gov/oes/current/oes172051.htm> within the occupational outlook handbook website; there are similar pages for all engineering disciplines. The information which can be obtained from this demographic section includes a more detailed breakdown of wages using percentiles, maps showing earnings from state to state, and even differing earning for areas within a state. Map data also includes where civil engineers are employed by state and area. Unsurprisingly, high pay and high employment of engineers are in high population states and major metropolitan areas.

If only looking at expected growth and median pay for engineers then the outlook for engineering as a whole is pretty good; average growth and high pay. After reviewing the Occupational Outlook Handbook I certainly have a more informed idea of what to expect from an engineering occupation. There are still important questions to be asked; are there more new engineers entering the field than growth of the field can sustain? If so, outlook gets worse but if growth is outpacing entrants to the field outlook gets much better.

## 16. Test Taking

### I GOT 99 PROBLEMS AND TESTS AINT ONE

When it comes to test taking I would consider myself right up there with the best. The amount of time I spend studying material when its presented (and even getting ahead of lecture sections) means I never have to cram when a test is coming. If there is something expected to be on a test which I'm unsure of I will take the necessary steps to become sure, well before the test arrives. Because of these good study habits and good practices toward test preparation, when they come, I am confident, do not worry about performance and am able to simply walk into it completely calm and focused.

Far too often I see people going into tests who have lost nearly an entire night's sleep studying the night before a test then arrive at the test tired, frustrated, stressed out and worried about how they will do. How can anyone perform under such conditions?

### WHERE A "WORLD-CLASS" ENGINEERING STUDENT WOULD WANT TO BE

Where I am!

### WHAT I NEED TO DO TO GET FROM A. TO B.

While the easy answer is "Nothing!" That's just lazy and unfit for a world-class engineering student. There is always room for improvement and if you are at the top of your game you take the necessary steps to achieve the next level of mastery.

## 2 Years + 1 Term Course Schedule

### Fall 2013 (Current)

General Chemistry – CHEM 221	5
Introduction to Engineering I – ENG 101	2
Differential Calculus - MATH 251	4
Plane Surveying – GME 161	4
Total Credits	15

### Winter 2014 (Registered)

General Chemistry – CHEM 222	5
Integral Calculus – MATH 252	4
Introduction to Engineering II - ENG 102	2
General Physics with Calculus I – PHY 221	4
Engineering Mechanics: Statics – ENGR 211	4
Total Credits	19

### Spring 2014

Vector Calculus I – MATH254	4
General Physics with Calculus II – PHY 222	4
Physical Geology (math/science elective) – GEOL 201	4
Engineering Mechanics: Strength of Materials – ENGR 213 (Pre ENGR 211)	4
Engineering Graphics – CE 203	3
Total Credits	19

### Fall 2014

Geographic Information Systems – GME134	3
Civil Engineering Materials – CE 212	4
Principles of Professional Practice – CE208	4
Computational Methods – CE 205	2
Structural Analysis – CE 331 (Only Available in Fall) (Pre ENGR 213)	4
Total Credits	17

Winter 2015

Introduction to Geotechnical Engineering – CE 311	5
Elementary Structural Design – CE 341	5
Engineering Mechanics: Fluids – ENGR 318	4
Statistical Methods I – MATH 361	4
	Total Credits 18

Spring 2015

Introduction to Transportation Engineering – CE 351	4
Closed Conduit Design – CE 371	4
Earth Pressures & Foundations – CE 312	3
Elective here for 3 credits (The Built Environment or The Engineering Profession)	3
	Total Credits 14

Fall 2015

Traffic Engineering – CE 354	3
Hydrology – CE 374	4
Applied Differential Equations I – MATH 321	4
	Total Credits 11

## Bibliography

Landis, R. B. (2013). *Studying Engineering: A Road Map to a Rewarding Career*. Los Angeles: Discovery Press.