

University of Alaska Anchorage - School of Engineering

# **ENGR A151 - Introduction to Engineering - Spring 2012**

**My Process to Become a "World-Class" Engineering Student**

*by*

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## **Introduction**

Reaching most goals requires a plan. My primary goal over the next four years is to earn a Bachelor of Science degree in engineering. The world's infrastructure requires engineers to help it grow and operate. It is this fact that makes the field of engineering so valuable to society and so appealing as a career choice. Engineers have an enormous pool of interesting career opportunities, the ability to shape the world, and an availability of jobs; an important factor in the current economy. I believe that becoming an engineer will go a long way in helping me to accomplish my dreams and become successful. That is why I am dedicating time and energy to develop my process to becoming a world class engineering student.

## **Defining and Committing to My Goals**

The first part of reaching any goal is clearly defining and visualizing it. It is my goal to graduate from UAA in three and a half years with a Bachelor of Science degree in Electrical Engineering and a GPA of 3.5. By the time I accomplish this I want to have completed at least one year of internship work and secured a position with an engineering company. With these steps complete I will be well prepared to begin my career as a professional engineer.

By strengthening my commitment to my goal, I stand a better chance at achieving it. Graduating with a BSE degree in engineering is very important to me because I have a deep desire to succeed and know too many people who scrape by in professions that they dislike. Engineering will be a career that I enjoy waking up in the morning for and which is accompanied by numerous benefits such as:

1. Interesting career opportunities
2. An ability to shape the world
3. Challenging environments
4. Financial security
5. Constant introduction to new ideas

Being an engineer will become my pathway to these benefits, and every time that I think of obtaining these things I will reaffirm my desire to become an engineer. I will also make this goal more important to me by investing more time and energy into it, which I will be afraid to have wasted should I want to give up on it. Through these methods I will strengthen my commitment to obtaining my BSE in engineering.

## **Recognizing the College Environment**

Next I will need to identify how the college teaching and learning process works. I have experience with the high school learning process, but the learning process in college is very different from that of high school. This is because:

- In high school more of the lessons were teacher guided, but in college most of the learning is done when the student self-studies and completes work.
- In high school most of the work was in class, in college most of the work is out of class.
- In high school the majority of the learning experience was done singularly, but in college it is necessary to depend more on classmates.

The learning process in college depends more upon my efforts, there is more out of class work to be managed, and working in groups has become increasingly important. In order to become a more effective student, I am going to have to adjust my learning strategies.

Since college learning depends more upon my efforts and less upon the instructor's walkthroughs, I am going need to take better notes. I should also begin taking strategies from *Studying Engineering* by Raymond Landis, such as reviewing my notes after each class period and immediately before the next class period [1]. It would also help to take advantage of any extra work problems (or such materials) as additional study sources. The fact that college involves more out of class work than high school means that I will have to better manage my time and keep track of my assignments. It will require a greater amount of my time and I will

have to devote more of my daily schedule to completing my work. Likewise, a greater number of assignments will require a certain amount of time set aside for each one. I need to begin keeping a daily planner so that I can keep track of any work that I have due and so that I can more effectively budget my time. In college the act of learning in groups is more emphasized to reflect operations in the professional world and as course material becomes more difficult. I need to work on finding a group of people that share my field of study and can assist me and learn as I learn. I should begin talking to my peers and try to if not organize some sort of study group, then become part of one that already exists. By knowing these differences between High School and College, I can gain a clear view of the skills that I will need if I want to succeed.

## **Organizing My Time**

As a result of college taking up a large portion of my time, I will need to learn to budget it if I want to avoid falling behind in my daily life and coursework. This means both organizing my current tasks by priority, and coming up with a long term plan to reach graduation.

Determining which of my tasks should have the greatest priority is as simple as organizing them into a priority matrix, like the one demonstrated by Dr. Landis, with the categories "Urgent Important, Not Urgent Important, Urgent Not Important, and Not Urgent Not Important" [1]. This priority matrix allows me to examine the tasks that I need to get done and how urgent/important each one is. In order to be more effective, endure less stress, and have more free time, I need to make sure that most of the activities on my to-do list are important but not yet urgent. Analyzing the matrix will help me to better budget my time and make a plan of what tasks I should accomplish first.

While my current tasks at hand are very important, the future comes faster than most think. That is why it was important for me to design a semester by semester plan to reach my degree in Electrical Engineering, which I have included in the Appendix at the end of this document. Every course required to reach my degree has been input into my plan so that I may avoid losing time. Due to the fact that I planned this school year poorly, I will only begin taking Electrical Engineering classes during the Fall 2013 and Spring 2014 semesters and will need to

attend a full year of school more than I should have. Once I have started taking these courses, I will seek an engineering internship during the summer after so that I may gain the experience that is valuable to those who hire engineers. After that summer when I return to school I intend to join the ASHRAE student club so that I can get practice working with my peers. Also, during the summers between regular school years I plan on taking one or two courses (depending upon my schedule) to accelerate my graduation plan and compensate for my poor initial planning.

## **How I Learn and What I Need to Improve**

Not all people learn the same. The teaching and learning methods that work well for some may not be well suited for others. Analyzing how I best learn and retain knowledge is how I will determine the methods that I use to study. By using the NC State University *Index of Learning Styles Questionnaire* I was given a breakdown of how I learn new things [2]. From this breakdown I can develop and improve upon the strategies that help me be more efficient in my studies.

I was rated as a mildly reflective learner when I had thought myself an active learner. Even though I need to use and work with concepts and ideas before I can understand them, I better grasp information if I know its purpose. A large part of my understanding coursework relies upon my ability to understand the destination that it is headed in. I benefit from taking longer to look at the short term goals of my classes and their structure instead of jumping headfirst into the material.

I also was rated as an intuitive learner instead of a sensing learner as I had thought before. I feel a strong need to know an ideas potential and how it should work if applied perfectly. In order to improve my learning I need focus on the most abstract details of my studies to maintain interest in them.

Rating very lightly on the side of verbal learning instead of visual learning confirmed what I knew before. The result reinforced my knowledge of the fact that I learn well by reading information laid down by an expert on whatever subject that I am studying, but also am

dependent upon pictures from time to time. To capitalize upon this trait I will maintain my current behavior and continue to thoroughly read about the subjects that I am studying as well as seek examples of them.

I also rated as a sequential learner instead of a global one, which explained my ease at understanding mathematics. This information tells me that I tend to need a series of clearly and logically drawn steps in order to reach an accurate conclusion. In order to make myself more balanced in this aspect I should try to look at the big picture of problems and then determine the details of that problem in order to make my learning style slightly more global.

This information lets me know how I best, but also allows me to see the weaknesses that most hurt me. Because I am a verbal learner I respond best to written or spoken words. Since I cannot tape an entire lecture, it means that I must rely heavily upon my notes which I take poorly. I also tend to try doing homework before I review its purpose, meaning I will need to take more time on my work.

## **Improving Upon My Weaknesses**

In order to become the best engineering student that I can I need to improve upon the areas where I show the most weakness. If I want to reach my goal of graduation with a 3.5 GPA, I will need to improve my skills quickly and effectively. My greatest weaknesses include poor note taking, studying for tests last minute, and taking on too many commitments.

Taking notes is one of the most important academic skills related to learning, and one of my weakest skills. Notes provide the basis for all self-lead studying outside of college classes, therefore note taking is essential to the college learning process. In order to improve upon this skill I began learning more about and implementing the note taking process. I learned that notes are not supposed to contain every detail of a lecture, but only the most important parts to be used for studying more to the point and more quickly. It is best to write down what is new to the learner and what is directly relevant to the main topic to be studied, or the purpose

of the reading [3]. Before I would struggle to include every detail of a lecture in my notes, but now do more listening and record only the main ideas and most emphasized points. Instead it is best to pay attention to the lecturer's style of presenting information and write follow up, one on one, questions for after class until your notes contain clear understanding of the key concepts (Berkeley). I had never thought of supplementing my notes with questions to ask my instructors. I also learned about the forgetting curve and how my notes will be more effective to me if I review them shortly after taking them, such as just after the class period, or the day after [4]. By doing this and using a style like the *Cornell Note Taking Method* I will be able to better analyze and improve upon my notes in an organized fashion should I miss material in class [1].

Waiting to study for a test until just before the test has been a long time problem of mine. This semester I began to, and will continue to, adapt my study methods to correct this problem. I have begun reviewing the material presented in class after the class in which it is used and before the next class period. I am breaking down the class schedule of each of my courses and detailing the topics that I will need to have mastered before each week is up. Using this method will keep me above the forgetting curve and enable me to study for tests effectively without using large chunks of time, and being unprepared when the test is finally announced.

As a product of my desire to get the greatest amount of experience out of a given amount of time, I often take on too many commitments at once. I fool myself into thinking that I can accomplish many things at once, and end up suffering weak results or failure in all of them. Last semester I suffered academically because I took on too many commitments. I was taking 15 credit hours, working 24 hours a week during the middle of the night, and still trying to keep up my social life. This semester I will be shaping my life to be able to devote more time to my studies. I have already found employment that will work better with my school schedule and is during the daylight hours. I have cut my monthly expenses to compensate for the loss of pay. I am scheduling times for my social obligations, and avoiding social events unless I have absolutely completed all of my classwork.

Eliminating and improving upon my weaknesses as a student is absolutely necessary if I want to accomplish my goals. Any boundaries to success that exist in my behavior will only grow when I am faced with obstacles for which I have not planned.

## **Overcoming Barriers to My Success**

Mental barriers are the greatest threat present to personal success. These barriers can range from fear of failure to the unwillingness to begin activities that are unpleasing. Any person who has striven toward a goal has had to deal with one of these obstacles before reaching goal. The difference between those who were successful in accomplishing their goal and those who failed was whether or not they were able to overcome those barriers. The majority of people will quit when faced with a large enough barrier. Designing methods to overcome my most common barriers is how I will ensure that they will not stop me.

One of the most common barriers from success, and one that often affects me, involves an unproductive behavior that satisfies some needs or wants that a person has, which prevents them from undertaking more productive tasks. In order to effectively minimize the effect of this barrier I have decided to budget the time allotted for these behaviors. I am going to try scheduling a time to experience these behaviors that will still allow time to complete my necessary tasks. If the tasks take up too much time I am developing a plan to make them quicker. For example, I enjoy working out. The time that it takes me to travel to and from the gym as well as workout takes around 2.5 hours a day. If I work out 5 days a week, that takes up a lot of time. So to decrease the time that I spend on fitness, I am looking for a closer location to work out and examining ways to make my workouts more efficient. Another way that I am solving the problem is to prevent the unproductive behavior by putting myself in a setting that allows nothing but application to my work, such as the Consortium Library. This has begun to limit the amount which unproductive behavior holds me back.

I also sometimes face unwillingness to attempt unpleasant tasks. To overcome this I tell myself that success comes with a price and at many times that price is a dedication of effort. Before attempting unpleasant tasks I am working on visualizing them as challenges and

envisioning them bringing me one step at a time closer to my most prized goal. As I mentioned before, I am also practicing putting myself in a position where I have no other option but to complete the task. One of the best ways that I have found of doing this to work in a group where the other members depend upon my effort and give suggestions about how best to begin.

The last major barrier that I sometimes face is blaming my struggles upon others or the situations that I am in. This leads to an inability to recognize my shortcomings and make improvements off of them. In order to correct this situation I have made a list of the factors that are under their control alone, and compared them to all of the factors affecting me at times that I have failed. This has helped me to understand that I am solely responsible for my success or failure. I have taken up a mindset to ensure my success even if it means offending others by denying their wants and requests in the process. I have begun practicing the act of examining the performance of those in situations similar to my own. If I see that others are unable to succeed under the same situations that I am in, then I accept that it is my responsibility to change that situation.

I recognize that overcoming these barriers is essential to my success and plan to continue working towards that feat.

## **Handling Stress**

Stress is a common factor in the downfall of many hard working people over the world. Many fail to maintain their lifestyles or reach their goals due to the effects of constant or poorly managed stress. Knowing how to correctly manage stress allows me to avoid this commonly underestimated pitfall.

During about half of the day I experience fatigue. This makes me less productive, causes me to fall asleep in class, and to do less things that I enjoy. It is known that fatigue may be caused by lack of sleep, poor diet, and lack of physical exercise. To solve this problem I am going to begin exercising in the morning to energize me for the rest of the day, which will allow me to sleep earlier at night. In order to get more vegetables in my diet I am going to begin

buying them in bulk, then freezing the extra in bags filled with water to help them keep longer. Implementing these strategies should help me experience less fatigue.

My work sometimes takes longer than it should because I become lethargic. I need to reduce this effect of stress so that I can complete my work faster and have more free time. I am going to do this by getting more sleep, as I mentioned in the previous paragraph, and practicing a relaxation technique each day. Since yoga has both mental and physical benefits, I will begin practicing yoga for a few minutes each day. I have found several instructional videos detailing yoga programs designed for people to do during work breaks. Hopefully this strategy will cure my lethargy.

The most troubling effect of my stress is my lessening of contact with my friends. It seems like I do not have time for prolonged activities with my friends like I used to. This has led to a serious decrease in my social life. I am brainstorming ideas that will allow me to hang out with my friends for short periods of time more frequently. I am also designating Saturday as a work-free day that will be dedicated to social activities.

By identifying my current stress issues and coming up with a way to eliminate them I will be able to quickly correct any stress related incidents in the future.

## **Summary**

I plan to earn my BSE in Electrical Engineering over the next four years. I have defined the details of my goal and committed to it by dedicating my time and visualizing the benefits of my success. The college learning environment depends primarily upon my effort in studying outside of class and learning how to make use of my peers. For these reasons I must become better at organizing my time and taking notes. Sorting my priorities and planning out my future steps has become very important and given my confidence in my path. Breaking down the ways in which I learn best has allowed me to develop strategies to maximize my efficiency and identify my greatest weaknesses. By identifying my weaknesses of poor note taking, poor time management, and responsibility overload I have been able to develop strategies to make them into strengths. Analysis of common hindrances to my productivity has shown me ways to

negate them and insulate myself from future pitfalls and learning how to manage my stress ensures that I will be less susceptible to unplanned vulnerability in the future. Through this process I stand a very good chance of reaching my very important goal of graduating with my Bachelor's Degree in Engineering and continuing on to a successful career.

## Appendix

Year	2012, Fall	Credits	Year	2013, Spring	Credits
	COMM 111	3		CSE 215	3
	CSE 205	3		HIST 131	3
	ENGR 151	1		MATH 202	4
	ENGR 161	3		PHYS 212	3
	PHYS 211	3		PHYS 212L	1
	PHYS 211L	1		PHYS 212R	1
	PHYS 211R	1		EE 261	1
	Total Credits	15		Total Credits	15

Year	2013, Fall	Credits	Year	2014, Spring	Credits
	MATH 302	3		EE 204	4
	EE 203	4		ENGR 105A	1
	EE 241	4		EE 353/L	4
	ES 208	5		CSE225	3

		ES 302	3
Total Credits	16	Total Credits	15

Year	2014, Fall	Credits	Year	2015, Spring	Credits
	MATH 314	3		EE306	
	EE 354	3		EE 465	3
	EE 314	3		EE 324/L	4
	EE 471	3		FR202	3
	FR 201	3		EE441	3
	Total Credits	15		Total Credits	

Year	2011, Fall	Credits	Year	2012, Spring	Credits
	EE 458	3		EE 438	3
	ESM 450	3		ME 306	3
				CSE 355	3

		EE438	3
Total Credits	6	Total Credits	12

## Bibliography

- [1] Landis, Raymond B., "Studying Engineering: A Road Map to a Rewarding Career", 3rd Edition, Discovery Press, Los Angeles, California, 2007
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<http://www.engr.ncsu.edu/learningstyles/ilsweb.html>
- [3] Wax, Dustin. (September 2012). Lifehack.org. *Advice for Students: Taking Notes that Work*. Retrieved from: <http://www.lifehack.org/articles/productivity/advice-for-students-taking-notes-that-work.html>
- [4] Peuker, Steffen. (2012). The Forgetting Curve. *UAA Classes*.