

# Industrial Blueprint

■ The IOE Student Newsletter ■



■ November 2016

## From the Editor

Hi IOE,

Hope your semester is going well! As you begin winding down your semester and start thinking about classes you want to take in the Winter Semester, here is a Blueprint edition of the IOE Course Guide. We hope this guide will help you in your course decision-making and possibly save you multiple trips to Wanda or your Peer Advisors. This Course Guide compiles class reviews of Technical Electives, Non-IOE Engineering Courses, Intellectual Breadth Classes and General Electives - all written by your fellow students.

Happy reading!

Your Editor,

Atakan Tin

## Undergraduate Advising

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#### Walk-in Hours:

Mondays: 10:30 am – 12:30 pm  
Tuesdays: 10:30 am – 5:00 pm  
Wednesdays: 10:30 am – 12:30 pm  
Thursdays: 10:30 am – 3:30 pm

## IOE Technical Electives

### IOE 425 - Lean Manufacturing and Services

IOE 425 is a half semester course offered both halves of Fall and Winter Semester. The course is one of the most useful in all of our IOE curriculum, as it applies to any career path an Industrial Engineer would like to go in, not just manufacturing as the course title suggests. I can personally vouch for the course's usefulness, as many of the concepts in the course applied directly to my last Co-Op. 5S, Fishbone Diagrams, 5 Why Analysis, Kanban, Shadow Boards, Kaizen and Muda were practically used daily. I would highly recommend this course to anyone looking for an elective, especially if you enjoy working in teams and hands on learning. The end of semester facility tour was especially memorable.

### IOE 438 - Safety Management

This is a 2 credit course offered during the winter semester. The course consists of a two hour lecture twice a week. Attendance is not required, but there is thorough discussion during lecture. If anything, class participation will prepare you for exams. Grades are based solely on 2 exams, which could be either beneficial or a nuisance, depending on your interests. The course covers safety topics including: accident prevention methods, regulation standards, slippery surfaces, and employer safety history. If you enjoy learning about safety management and the impact of ergonomics in the workplace, I would recommend this course.”

### IOE 463 - The Measurement and Design of Work

This class teaches you all about the different techniques used to observe and quantify data in a workplace as well as how to use this information to redesign a job or design a job from scratch. The techniques learned in this class are extremely applicable to the real world and any job you would get in Operations, I was even asked in an interview if I had specifically taken this class. Even though some of the information is presented in a somewhat scattered manner, all the information is online and you can sort through it yourself pretty easily. There are homework assignments about every other week that the Professor goes over a lot in class before it's due. There are two open note exams and a final project, as well as a volunteer activity worth 10% of your grade to simply go out and do 12 hours of volunteering. I found the class to be very interesting and not overly difficult.

### IOE 466 - Statistical Quality Control

Generally speaking, this is a great course. You will learn how to build various kinds of control charts to do quality control. It focuses on both statistical details and general application. Homework and exams are strongly related to course materials. Sometimes it may be a little bit hard to understand the mathematical parts. However, it will be very useful if you consider quality control as your future career.

## Non-IOE Engineering Courses

### CEE 265 - Sustainable Engineering Principles

*By Maddie Price*

I took Civil and Environmental Engineering 265, a class focused on Sustainability in Engineering last semester, and found it very interesting. Taking this class as a non-IOE Engineering class showed me topics I would have never studied within the IOE Department. It was very helpful to learn about my own impact on the environment, and how I can reduce my carbon-footprint. Having knowledge about sustainability, and how to have sustainable practices in engineering is very valuable in any future career pathway. I would recommend this class to anyone who is looking for a new perspective on how to keep our planet clean.

*By Jenna Locricchio*

This course focuses on the economic, environmental, and social aspects of sustainability in relation to engineering. Topics covered in this course include product life cycle assessments, carbon, water, and energy footprints, economic assessments, and mass and energy balances. There are three exams, weekly homework assignments, and occasional pre-class videos to watch. Overall this class has prepared me to make educated engineering decisions in the future, knowing how these decisions will impact the economy, environment, and society. CEE 265 is a valuable course for engineering students of all disciplines to take.

### EECS 280 - Programming and Introductory Data Structures

*By Julia Clark*

EECS 280 is a Non-IOE Engineering class. This is the programming class that comes after ENGR101: Introduction to Computers and Programming. This class is a great class to take if you have any interest in coding beyond ENGR101. The material covers more advanced topics of C++. I would recommend this class to others because it challenges you and makes you think “outside of the box”, which can be applicable to any real-world situation.

*By Kenneth Vi*

I took EECS 280 last year. This class naturally follows ENGR 101 or EECS 183 and expands on programming concepts learned in either class. It counts toward your major, but the biggest reason that I took this class was because I love programming and I decided to pursue a computer science minor in addition to IOE. Some projects can be challenging, but this class teaches you a core set of programming skills that can translate beyond C++, which is the only language you use in the class. These skills are language-agnostic and are easily generalizable to problem-solving skills that you need in all disciplines.

## Non-IOE Engineering Courses

### **NERS 211 - Introduction to Nuclear Engineering**

*By Julia Clark*

NERS 211 is important because nuclear power is becoming a significant resource in our society. This class is interesting because it covers many diverse topics within nuclear engineering. In this class, you'll learn everything from the history of nuclear energy to its applications in health today, along with the more technical aspects of nuclear energy as well. I enjoyed taking this class as a Non-IOE Engineering course because it is much different than anything covered in IOE courses.

### **ME 211 - Introduction to Solid Mechanics**

*By Jessica Hirsh*

This class counts as a non-IOE Engineering course, and it is 4 credits. I chose to take this class because I really enjoyed Physics 140, and I wanted to build upon the physics principles I learned in the intro physics class. In ME 211, you will draw free body diagrams and calculate moments and forces to ensure that the bodies remain at equilibrium. You will also learn about what happens when the bodies begin deforming due to stress and strain, and you will be able to calculate these deformations. I found all of these concepts to be really interesting, and they built upon each other throughout the class. The homework is difficult, but the professors and GSIs have a lot of office hours throughout the week and are always willing to help. I would take this class if you liked Physics 140 and would like to continue learning more advanced physics concepts.

## Approved Non-IOE Technical Electives

### **ACC 471 - Accounting Principles**

*By Sarah Park*

This class is a great introduction to the basics of accounting. After taking the class I feel like I now have a good grasp on the general principles of accounting. Taking Accounting 471 will be very beneficial if you plan on pursuing business at all. Some concepts in Accounting 471 also overlap with what the IOE classes teach. This class counts as a non-IOE tech elective.

### **PUBHLTH 300 - Behavioral and Social Foundations for the Health Professions**

*By Jessica Hirsh*

This class counts as a non-IOE Technical Elective, and it is 4 credits. I took this course because I was interested in learning a bit more about Public Health, and I heard that the professor (Vic Strecher) was incredible and inspiring. He did not disappoint. The class is very eye-opening, and Vic's lessons emphasize finding and honing a purpose in your own life. You will learn about different behaviors related to wellness and then be given a project to implement a behavior change. After analyzing the effects of our behavior changes, we wrote a short paper and gave a 3 minute IGNITE! Presentation, which is essentially a presentation where the slides auto-advance every 15 seconds. Watching all of the presentations was really interesting, and the class in general inspired me to make behavior changes in my own life.

### **BIOLOGY 174 - Introduction to Cell and Molecular Biology**

*By Meng Yuan Zhang*

This class is one of the biology courses that may count towards technical electives. I took the class with little knowledge of how proteins, DNA or cancer worked because I didn't take biology courses in high school. Thus I feel like I learned a great deal about how the body and certain diseases. The grading includes participation, quizzes on reading before lecture, discussion exercises as well as four exams. Lectures were recorded if anyone wanted to go back for review or missed a part of the notes. Also office hours of both the professors and the GSIs were very helpful.

## Intellectual Breadth

### **French 103 - Review of Elementary French**

*By Blake Bormes*

French 103 covers the first two semesters of French in one semester, which is great for the student who took French in high school but does not remember it completely. This class is a great introductory course to learning the language and will help you diversify your knowledge. I am using this course to obtain my International Engineering minor and also to learn more about different cultures. I really enjoyed this class because I learned about the main differences between the French and Americans. Because of French 103, I feel more prepared to enter the workforce and collaborate with people who come from different backgrounds than me.

### **PSYCH 111 - Introduction to Psychology**

*By Jake Biegger*

PSYCH 111 is an introduction to psychology course that introduces the concepts of thought and behavior. In this course, students learn about the fundamental concepts of psychology as well as studies and cases where these concepts have been tested. This class is important because in every class or workplace, people must interact with each other. Learning about factors that affect thought and behavior of both individuals and groups can help when working with others. I learned how people think and develop, and I was able to learn a lot about my own thought processes as well through this class.

### **SPANISH 231/232 - Second-Year Spanish**

*By Victoria Glunt*

Spanish 231 and 232 both provide an in depth look at the Spanish language as well as different Spanish speaking countries around the world and some of the holidays they celebrate. The classes are taught entirely in Spanish, which ultimately provides much needed experience and allows for a practical use of the language. This will benefit any future communication with a native Spanish speaker. Between 231 and 232, an extensive vocabulary list is covered as well as many different verb tenses. The classes are taught in a small group setting to allow for discussion and group work. By the end of these two classes, you should be proficient in Spanish which can be an important tool in the work force. From these two classes I have learned how to communicate in another language and learned about various cultural traditions from other countries. I have also improved on interpersonal skills, especially in the Spanish language. Overall, I believe that I have gained useful skills from these classes.

## Intellectual Breadth

### **MOVESCI 241 - Exercise, Nutrition and Weight Control**

*By Chris Hudson*

In this class I learned about the many factors that influence energy intake, energy expenditure, and weight control and their effects on hunger, satiety, and metabolic rate. We discussed several topics relating to the current food production industry along with the ways that the body processes the food that we consume. This class taught me what is necessary for obtaining and maintaining a healthy diet and how to properly exercise for weight loss and weight gain. I learned how the body processes different types of exercise in terms of energy expenditure and nutrition. Furthermore, it analyzes the differences in energy requirements, nutrient storage, and metabolism between sedentary adults and high performance athletes. This class is also interesting because it is point based, meaning that no assignments or tests are mandatory. Your grade is determined by reaching a certain number of points for each letter grade.

### **ENTR 411 - Entrepreneurship Practicum**

*By Julian Fiallo*

This course exposes you to the problem identification, customer discovery, customer validation, and design iteration processes of creating your own product and/or business. The class will expose you to the processes of developing a business model and engaging with prospective customers to test the potential of your product/business. Most of the work is done outside of the class room with 3 projects. Nevertheless, it is a good course for engineers interested in entrepreneurship, business, finance, and accounting to take because it provides you with the experience of trying to develop your own business from the ground up.

### **ECON 101 - Microeconomics**

*By Monica Bian*

ECON 101 is worthwhile to take for people who want to gain a deeper and broader understanding of the economic jargon and concepts discussed in IOE 201. In the class, I learned, in detail, about opportunity cost, marginal costs and revenues, supply and demand, Nash equilibrium and the prisoner's dilemma, as well as many other concepts that could be easily applied to any finance job in the future. While IOE 201 is more about investments and cash flows and project comparison, ECON 101 focuses more on the basic, overarching concepts and methods that define and influence how to make economic decisions. If IOE 201 was interesting to you, then ECON 101 would be a great class to take to further expand and develop your economic knowledge bank.



## General Electives

### **Dance 100 - Intermediate Hip Hop**

*By Kenneth Vi*

I took Dance 100 last year, during my sophomore year. The class is designed for non-dance majors (like me!), so it was taught without expectation of previous dance experience, albeit at a faster pace than some of the other introductory Dance 100 sections. There are a lot of different sections of Dance 100 with different dance styles and different graduate instructors, but the one I chose was intermediate hip hop, which was an absolute blast. We learned both technique and choreography and the class culminated to a final piece at the end of the semester that we performed for friends that we could invite. It's only 1 credit and it's a great stress relief if you love to dance. Other than a stress relief, all the dance classes teach you new ways to become familiar with your body, which can translate to becoming more aware of how you physically represent yourself, especially during presentations.

### **MATH 424 - Compound Interest and Life Insurance**

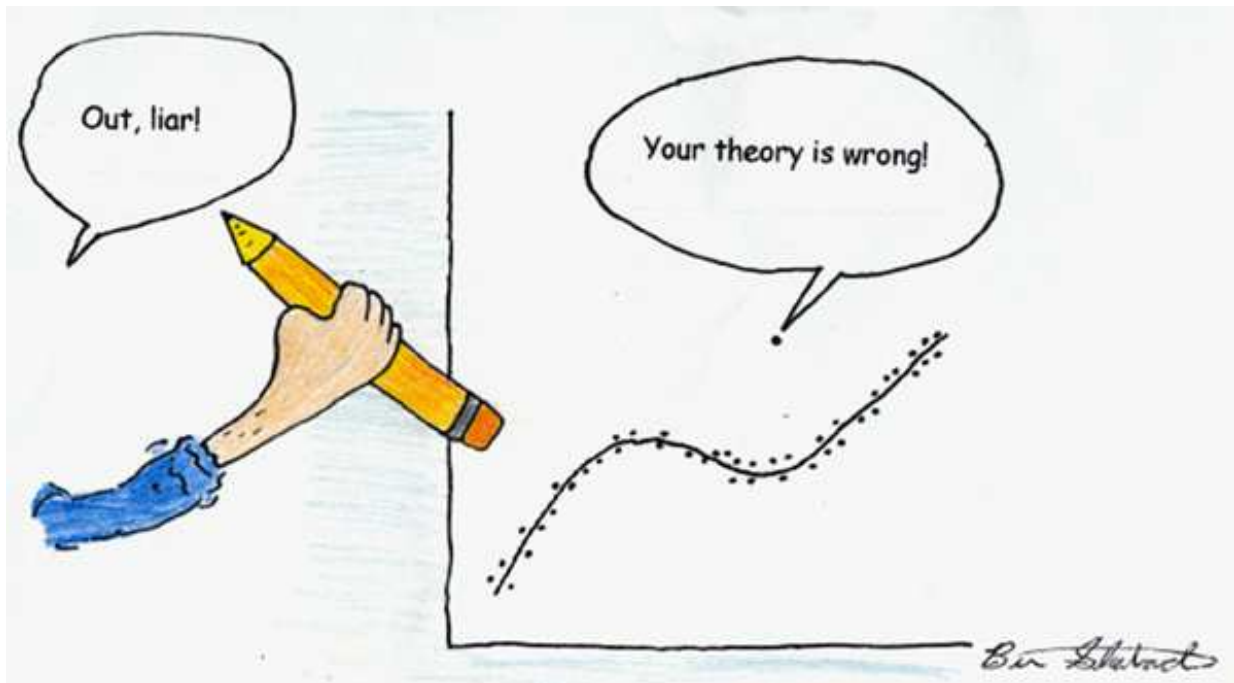
*By Tianke Wang*

This class is on financial mathematics. Content-wise, it is closest to that is taught in IOE 201. It covers interest, annuities, bonds, amortization, and other topics in greater depth than what is offered in 201. The class focuses on derivations of formula and includes a substantial amount of math; however, the highest level of math that you should know is basic integration and differentiation. This class would be good for someone who wants a more mathematical approach to finance as opposed to a class in Ross. It would also be a good technical elective, and would be a good extension to IOE 201.

### **MATH 425 - Introduction to Probability**

*By Carrianna Voellm*

I took this class as one of the upper level math classes for my math minor. The class is an introduction to probability. It requires a good understanding of Calculus III. Office hours were extremely helpful and extra statistics knowledge helps if you are interested in big data. Overall, a great class and definitely one I would recommend taking if you are interested in the math minor.



# Thanks for Reading!