

# Industrial Blueprint

The IOE Student Newsletter



March 2017

## From the Editor

Hi IOE,

As you begin winding down your semester and start thinking about classes you want to take in the Fall 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:

Tuesdays: 8:30-10:30 am, 1:30-3:30pm  
Wednesdays: 10:30 am – 1:30 pm  
Thursdays: 10:30 am – 3:30 pm

## IOE Career Counseling

By Cheng Sun

I have talked to Debra Levantrosser for advice on finding an internship several times. The first time, she carefully reviewed my resume and gave me many great suggestions on how to organize the materials. She also taught me useful tricks in talking with recruiters. In the following meetings, I turned to her seeking advice on preparing for interviews. During the mock interview, when I am not prepared for some classic questions, Debra will stop and help me find out how to respond properly based on my experience. When I came across similar questions in practice, I feel more confident answering them.

Debra has an amiable personality, always ready with a kind word and a smile. She even gave me detailed suggestions on how to dress in the interview. I paid more attention on the small talks at the beginning of conversation after Debra told me how important it is to make a good first impression. Everything Debra told me helps in my intern-seeking process. I think it is not just because she had great experience from practice. Debra truly cares about students. She gives brilliant suggestions considering specific situation for every single one. She will also send me some great articles on job-seeking from time to time to help me have a better understanding of how recruiters think and what companies want.

## FREE PIZZA Entering The Workforce? FREE PIZZA Here's Some Advice...

If you are entering the workforce this year or taking an internship, you'll want to attend this workshop.

- What to do in your first week on the job
- What to do *before* day 1 on the job
- Your 30-60-90 day to-do list
- How to dress
- How to behave
- Professional etiquette
- General tips on entering the workforce (hint: it's very different from being in school)

Join a Panel of recent IOE grads from 2013, 2014, 2015 and 2016 for presentations and an interactive Q&A session.

### The Panelists:

Jordan Jackimowicz  
Johnathan Lee  
Debra Levantrosser (IOE Faculty)  
Matt Nelson  
Jayesh Srivastava  
Austin Timmer

**DATE:** April 12, 2017

**TIME:** 7:00-8:30pm

**LOCATION:** IOE 1610

### Debra Levantrosser

*Career Counselor*

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Appointment Sign-Up: <https://docs.google.com/a/umich.edu/spreadsheets/d/1qjpBonZw-sFAAgrTHdCII-No7S8Y59lb76cRPTV3trcw/edit?usp=sharing>

## IOE Technical Electives

### IOE 425 - Lean Manufacturing and Services

*By Kenneth Vi*

IOE 425 teaches a way of thinking that can benefit almost any field, which makes it an important class to take. Lean methodology is all about continuous improvement and identifying waste to decrease lead time, lower cost, and increase quality. If you're interested in improving processes and identifying waste, then 425 provides a very good framework for that field of work. While I might not use the exact tools taught in 425, I took away from the class a valuable way to approach problems.

### IOE 461 - Quality Engineering Principles and Analysis

*By Stephanie Brereton*

This course teaches students the analysis and manufacturing skills that can be used to improve quality in a manufacturing environment. The professor, Pat Hammett, is very engaging, and he uses his industry experience to provide concrete examples of conceptual topics. IOE 461 is an important class because the statistical data analysis tools can be used in any setting, not just manufacturing. My favorite aspect of the class is the case studies. Teams use techniques taught in class to find the root cause of the problems presented in the case studies, and provide examples of methods to sustain the recommended improvements. My problem solving and data analysis skills have improved through the techniques taught in IOE 461.

### IOE 466 - Statistical Quality Control

*By Jessica Sirias*

Statistical Quality Control is a great foundation course if you are interested in going into quality engineering or working in a manufacturing based environment. This class is similar to IOE 461 (Quality Engineering Principles) in that you are learning Six Sigma concepts, but delves more into the mathematical and conceptual aspect of quality. In the course, you learn about how to create and analyze different charts and statistical tests that allow you to be able to tell a story with your data in terms of quality. This is important in a manufacturing based environment when you are tasked in trying to find the source of defects in a product or assembly line and need to use data to determine the root cause of the error. Overall, from the course, I became more comfortable with statistical and probability concepts that were introduced in core IOE classes. I also gained more of an applied view of tools that industrial engineers use to make informed decisions on how to improve a process.

## Non-IOE Engineering Courses

### ME 211 - Introduction to Solid Mechanics

*By Klaudia Mastela*

Intro to Solid Mechanics was a difficult class, but very rewarding. I picked the class to satisfy my non-IOE engineering course requirement because I had previous exposure to mechanical engineering and wanted to gain more knowledge about the subject. I quickly realized that the class was demanding; Attendance was required to understand the material and homework was due on a weekly basis. As the semester progressed, GSI office hours would quickly fill up due to need. The class was rewarding though because the material covered is easily applicable to the things we see every day around us. It has been a year since I took the class, but I still find myself thinking about the topics we covered. Although I took the class with Professor Thouless and he is not teaching it in Fall 2017, I would recommend taking the class if you don't mind putting in some extra work to learn some interesting material.

### ME 240 - Introduction to Dynamics and Vibrations

*By Taylor Martell*

ME240 is a course that introduces very interesting applications of Physics 140. You learn more in depth about the kinetics of moving particles, work and energy, and impulse and momentum. You also work with completely new material such as vibrations of rigid bodies. Although the material can be challenging at times, I found that this course really improved my problem solving abilities and solidified my physics knowledge. Professor Perkins is by far the best lecturer I have ever had and always finds a way to make the material engaging and intuitive. Also, the concepts covered in the homework sets each week are very representative of the exam material. ME240 was definitely one of my favorite classes.

### CEE 265 - Sustainable Engineering Principles

*By Shivani Joshi*

Sustainability is a really broad concept, but CEE 265 gives a great introduction to it. Some of the topics covered include eco-footprints, air and water pollution, and material consumption. The class has a good balance between conceptual material and calculation-based questions, so it is easy to see how the concepts are applied in real-world applications. The class teaches you how to approach problems with the bigger picture in mind and consider important environmental, social, and economic consequences. CEE 265 is relevant to any major, as sustainability is becoming increasingly important to all fields.

## Approved Non-IOE Technical Electives

### **MATH 423 - Mathematics of Finance (Cannot get credit for both MATH 423 and IOE 453)**

*By Tianke Wang*

This course covers topics such as portfolio management, derivatives pricing, and financial risk management. Math 423 focuses in applying mathematical techniques to these topics in finance. There is an emphasis on using analytical and quantitative methods to solve problems; and consequently, a good understanding of probability, statistics and linear algebra are required. This course has taught me how to look at and analyze financial instruments and transactions using math. Some topics overlap with concepts taught in IOE, such as linear/nonlinear programming and statistical modeling. Math 423 would be a good class to take if you are interested in finance as well as the mathematical techniques that are used in finance.

*By Yang Lu*

MATH 423 is an introduction to some basic knowledge and math models used in finance and economics. The course is important because it covers fundamental and useful models in pricing derivative instruments such as Black-Scholes Model. Other important topics for this course include portfolios, asset pricing, forward and futures, options, Brownian motion, etc. After taking this class, you will get a basic understanding of derivative instruments and pricing. However, the derivation part in this course is challenging. If you are interested in finance, taking MATH 423 is a good choice.

### **FINANCE 302 - Making Financial Decisions**

*By Christopher Hudson*

This class is titled making financial decisions and it is a great introduction to most if not all topics relating to finance and money management. I recommend this class as a first Ross class for people who want to learn more about the business world and how decisions are made. There is a lot of work in Excel and the material of the first few classes is very similar to the material learned in IOE 201. Other topics explored include investment project evaluation, stocks and bonds, and risk and uncertainty. This class is open to everyone so there is a large mix of majors in the class who want an introduction to financial decision making topics. My biggest takeaway from this class is learning ways to make my own personal financial decisions.

### **ME 320 - Fluid Mechanics I**

*By Jiaming Yang*

I recommend MECHENG 320, Fluid Mechanics. This class counts as an IOE technical elective. You can learn things completely different from IOE course content, and explore a new world in mechanical engineering. The class material is very intuitive, so there is no need to worry about your grade.

## Intellectual Breadth

### **ASIAN 274 - Introduction to Korean Civilization**

*By Athulya Ajoykrishnan*

One class I have taken to satisfy my humanities requirement is ASIAN 274, Introduction to Korean Civilization. Coming into this class, I had no background in Korean history or even culture. The lectures were eye opening, giving me insight to a different part of the world. Additionally, the professor for the class is one of the best lecturers I've ever had. He made the class something I looked forward to and enjoyed each week. The class has three short quizzes and a final paper, and is not participation-based. You can learn a lot in a low stress environment. I would highly recommend taking this class if you have a chance!

### **ASIANLAN 405/406 - Business Chinese I/II**

*By Meng Yuan Zhang*

This class satisfies the 300 level LAC requirement in intellectual breadth and is a relatively easy 3-credit class for a fluent Chinese speaker (the class is conducted in Chinese). ASIANLAN 406 is not dependent on 405 and neither class has essays, long readings, homework or exams. However, attendance as well as participation is quite important in this small class and there are quite a lot of quizzes + two 10min presentations. The quizzes may be quite difficult for someone not fluent in Chinese because one has to memorize all the characters. Recommended for someone who is interested in working in China in the future, but would like to improve his/her technical communication skills since most of the class time is spent on discussions of current events around the world. I personally like this class because I actually learned more Chinese and was given valuable feedback on my communication skills.

### **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.

## Intellectual Breadth

### **GERMAN 350 - Business German**

*By Petra Romano Lieber*

This is a 3 credit class taught entirely in German, and the semester is divided into 3 parts. The first part is more theoretical, where the students learn about the history of money, the euro and Germany's economy. For the second part, students learn how to write cover letters and resumes in the German style, which is particularly useful if you're thinking of applying for an internship in Germany. The last part of the class is much more hands-on; students learn about the stock market, and do a two-month long stock market simulation, where they can buy and sell stocks, and then do a presentation about it. Overall, this is a great introduction to business and finances, and the vocabulary learned is extremely useful in an international engineering and business context. I would highly recommend taking this class if you are familiar with German and interested in the financial side of IOE. This is also a 300-level International Course for the International Minor.

### **GERMAN 386 - German Fairy Tales**

*By Monica Bian*

German 386, or German Fairy Tales, is a class taught entirely in English about the authenticity, history, and motifs of the Grimm's fairy tales. From classics such as Cinderella and Snow White to lesser known tales like The Juniper Tree, I learned how each tale reflects different societal values, and how each tales' motifs reveal something about both external and internal realities. The class played an important role in developing my ability to make connections between motifs in literature to common occurrences in real life, and to identify ways that the human psyche is manifested in stories as simple as fairy tales. Through discussion and essay assignments, I refined my ability to objectively express my thoughts and opinions through academic writing. The class culminated with a final argumentative essay with various prompts, and, while the reading load for the class was fairly light-- about 2 academic articles and around 6-8 short fairy tales a week-- I developed my ability to draw evidence from those readings to effectively support a thesis for my final paper. Topics discussed in the class included sex and violence, anti- feminist motifs, and child pedagogy in the Grimm's fairy tales, and it was shocking for me to learn how much more depth there was to fairy tales in comparison to how I interpreted fairy tales through Disney adaptations. Taking this class taught me how to draw parallels between the real world and the recurring morals and motifs of fairy tales, and it has brought a whole new perspective to the literature that defined my childhood. I highly recommend the class to those who still need to complete their 300-level humanities requirement, or for those who simply want to balance their IOE curriculum with a class that is a little more out-of- the-box.



## Intellectual Breadth

### **CLCIV 371 - Sport in the Ancient Greek World**

*By Jason Comstock*

My favorite class I've taken outside of engineering is CLCIV 371-Greek Sport. The class examines the origin of the Olympics in Ancient Greece and compares modern sports to those of the past. It also includes a discussion section where you can debate current issues in sports. My favorite part about Greek Sport is the guest speakers from the athletic department, such as Coach Beilein and Coach Berenson, who come and speak at almost every other lecture. The professor, Dr. Potter, is also very engaging, funny, and intelligent. Overall, Greek Sport provides a nice change of pace from the math-based engineering courses. Plus, it fulfills the 300-Level Humanities Requirement. For every IOE student, but especially for sports fans, CLCIV 371-Greek Sport is highly recommended.

*By Julian Fiallo*

CLCIV 371 is a 4-credit course that encompasses the evolution of ancient Greek sport and its influence on modern sport. Although there is a decent amount of reading and writing involved, the class is eye opening, as it makes fascinating connections between ancient and modern sport, highlighting how history has repeated itself in several ways. The course also covers the importance of human entertainment and politics as two of the main catalysts of the evolution of sport. Overall, I learned a lot from taking this class, not only about sport, but also about societal habits throughout history. I highly recommend taking it.

### **MUSICOL 345 - History of Music**

*By Allison Redfern*

If you are looking for a good 300-level humanities class for the fall semester, Musicology 345 is the way to go. This class explores the history of European music from the Middle Ages to the Baroque era. I am personally intrigued by both music and history, so this class was really enlightening as I got to be exposed to many historical genres of music as well as make connections between these genres across time periods. Professor Mengozzi was such a delightful teacher and was extremely knowledgeable on the material. He even brought his lute into class one day to play a couple songs! Musicology 345 also exposed me to more music performances on campus because one of the assignments was to attend a concert and write a report on it. You don't need to have a music background to take the class, and most students in my class were actually engineers. Overall, I highly recommend Musicology 345 as a fun and interesting 300-level humanities course.

## Intellectual Breadth

### **ARCH 357 - Architecture, Sustainability and the City**

*By Erin Guder*

This class was not only interesting, but it was also highly applicable to any student's daily life. In this class, sustainability and its applications were discussed in the context of architecture and civilizations. We started by looking at ancient civilizations and the reasons for their collapse. By looking at the past, it allows for meaningful reflection on our present and future, especially considering that global warming is a hot topic now. Not only do I have a better understanding of my environment, I have a better understanding of my position in it. I also notice design decisions in my community and their direct environmental impacts. Ultimately, this course helps you become more aware of your surroundings.

### **ANTHRCUL 330 - Culture, Thought, and Meaning**

*By Sara Cahn*

Last semester I took Anthrcul 330, an anthropology course on Culture, Thought and Meaning with Professor Erik Mueggler. The class gave a broad overview of many different aspects of anthropology and really taught me how complex anthropology truly is. The course required weekly readings and short writings that were later discussed in the weekly discussion session. The course also required two essays where you could choose your subject from a short list and you were given a great deal of freedom in these assignments. Overall the class was very interesting and if you have an interest in anthropology or just want a better understanding of what anthropology is, I recommend taking this course.

### **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

### LING 111 - Introduction to Language

*By Kyung Kim*

I took Linguistics 111 because I heard that it was an easy class, it fit my schedule very well, and the class material sounded interesting. It is the introductory class for linguistics, which is the study of language. From phonemes to perception of words to sign language, you will learn a variety of topics in the human language. The workload is pretty light, and the midterm and final exam are take-home tests that you complete on the computer with open notes and book. There are also no papers to write (huge relief for the engineers!). If you are looking to take an easy class on central campus and learn things you never thought of before about language, this is the class for you!

### GERMAN 304 - Studies in German Culture

*By Pande Putu Adysti Kardi*

One of the most interesting non-IOE class that I have taken in University of Michigan is German 304. German 304 classes are one credit classes that taught me a lot about German's fascinating history, art and culture. I refer to them as "classes" because there are several sections, in which each section covers a different topic for half of a semester. This semester, I took three different sections; Expressionists in Munich, Freud, Jung & the Unconscious, and Art & Politics: Joseph Beuys. These classes are offered both in winter and fall and they can count towards the 300 -level humanities intellectual breadth requirement if three sections are taken at once. Out of all of the three sections that I'm taking, I really like a particular section titled Freud, Jung & the Unconscious. This section taught me a lot about fascinating theories behind human psychology and unconsciousness, which were initiated by two legendary German psychologists, Sigmund Freud and Carl Gustav Jung. I highly recommend students to take one or more of these German 304 classes because the topics covered will bring deeper insights about arts and psychology in which engineering students, like me, would find fascinating.

### ECON 101 - Microeconomics

*By Kevin Duan*

Econ 101 is a great class to take especially if you were interested in the content of IOE 201. Since many IOE students are interested about jobs in finance, it's important to learn some critical economic concepts ie: marginal costs, supply and demand and prisoner's dilemma. 201 focused a lot more on financial project management and cash flow, however Econ 101 will give you a deeper understanding on the backbone that makes up a lot of the concepts in 201. The concepts learned in Econ 101, is not just important to a future in finance, but is also great in helping you think through real world problems. It's not too challenging and you'll definitely learn a lot!

## General Electives

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

*By Christopher Hudson*

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.

### **EECS 281 - Data Structures and Algorithms**

*By Alexander Copp*

You may have heard this class referred to as one of the hardest classes at Michigan. While that may not be far from the truth, you will also hear that this is many people's favorite class they took at Michigan (after they're done). You will spend long and sometimes frustrating hours on your code, but it will be very rewarding when you succeed. This class is not just about getting the right answer, but also getting it in the most efficient manner possible, both runtime-wise and memory usage-wise. My one piece of advice would be start your projects early! An early start date correlates positively to a good grade when it comes to projects.

## Lean Thinking



# Thanks for Reading!