

Industrial Blueprint



- The IOE Student Newsletter -

November 2015



Source: <https://www.pinterest.com/pin/326651779194773798/>

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 Michigan 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 (guilty as charged). This Course Guide compiles class reviews of Core Courses, Non-IOE Engineering Courses, Technical Electives, Intellectual Breadth Classes and General Electives - all written by other students. Hope you enjoy it, happy reading!

Your Editor,
Aneesha Reddy

Undergraduate Advising

Wanda Dobberstein

Undergraduate Student Advisor
1729 IOE Building
Email: wldobber@umich.edu

Professor Yili Liu

Undergraduate Student Advisor
Email: yililiu@umich.edu

Professor Luis Garcia-Guzman

1777 IOE Building
Email: lgguzman@umich.edu

Erik Knapp

Peer Advisor
1749 IOE Building
Walk-in Hours:
Mondays: 9:30 - 10:30 am;
 12:00 - 2:00 pm
Tuesdays: 12:00 - 3:30 pm
Wednesdays: 1:00 - 3:00 pm
Thursdays: 10:30 am - 2:00 pm
Email: ioe.peer.advisors@umich.edu

Table of Contents

IOE Core Courses.....	2
Non-IOE Engineering Courses.....	3
IOE Technical Electives.....	5
Approved Non-IOE Technical Electives.....	5
Intellectual Breadth.....	6
General Electives.....	7
Other.....	7

IOE Core Courses

IOE 310 – Introduction to Optimization Methods

By Evan James

IOE 310 is my favorite class that I've taken to this point at Michigan. In this class you learn to model real-world scenarios and apply optimization methods to solve them. The class focuses on linear programming and the use of several algorithms, all of which are important tools to be applied in higher-level IOE courses. My biggest takeaway from this class was realizing just how many things in everyday life can be or have been optimized. Learning to understand the science behind this optimization was very interesting and made the class quite enjoyable.

IOE 474 – Simulation

By Aaron Zhou

IOE 474 is Simulation class. Course topics include modeling and programming simulations in ProModel; input distribution modeling; generating random numbers; statistical analysis of simulation output data. Professor Henry Lam presents course material clearly, and he is happy to listen to opinions. The homework is moderately difficult, but the lab is kind of another course, which is Excel and Promodel simulation. The lab assignment may be tedious if you make some bugs but can't debug it. You will be able to simulate real-life situations after taking the course.

Non-IOE Engineering Courses

CEE 211 – Statics and Dynamics

By Nicole Bartecki

Statics and Dynamics (CEE 211) was a very informative Non-IOE class. It teaches students a lot about how bridges or other structures/systems could be created. I really enjoyed this class because it builds on what students have already learned from physics 140, but goes more in depth so I could understand it better and see the application of civil engineering in the real world. I think this class is important to any student who has an interest in learning more about civil engineering or hopes to work with a civil engineering firm in the future.

MSE 220 – Introduction to Materials and Manufacturing

By Andrew Fountain

Materials Science Engineering 220 is the introduction to materials engineering and materials processing in manufacturing. The course begins by teaching you about internal structure of different materials on an atomic level and from there the scope widens to cover the engineering properties of metals, polymers, semiconductors, ceramics, and composites and the process of how each is made. This class provides information useful for manufacturing careers, but also information that is helpful for understanding everyday materials and their behaviors.

The section of MSE 220 I am in is structured so that there are no lectures, exams, or graded homework. Your grade is mainly based off of your effort level in the class, but there is a lot of work required. You have to read and annotate a chapter of the textbook before every class and answer questions about the reading. The homework assignments are also long, but again everything is based on effort. The professor, Steven Yalisove, is very open to suggestions regarding the class's structure and is always willing to help students out. If you are willing to put in a decent amount of work this class is great for satisfying part of the non-IOE engineering course requirement.

CEE 265 – Sustainable Engineering Principles

By Emily Smith

This course covers topics in sustainability, including environmental, economic, and social aspects. It is pretty calculation heavy, but there is also a fair amount of conceptual topics covered. The classes usually start with a discussion about videos watched prior to class, and continue with mathematical problems and examples walked through by the professor. The exams are open note/computer, so the emphasis is on understanding the topics covered in class instead of memorizing facts and equations. This course is applicable to all engineers because the environmental problems currently happening affect everyone, and must be approached by all engineers in order to solve them.

Non-IOE Engineering Courses

EECS 280 – Programming and Data Structures

By Emily Smith

This course gives you a more in-depth experience of C++ programming than ENGR 101. The topics in this course include recursion, abstract data types, polymorphism, among others. The class includes five projects that go more in depth than the 101 projects, and give you more experience learning how to de-bug and write test cases. Projects can be worked on in pairs, so writing code that can easily be understood by others is emphasized. The content of this class is important because it's helpful to have coding experience in this day and age, and it helps you improve your problem solving abilities.

IOE Technical Electives (Winter Term)

IOE 463 - The Measurement and Design of Work

By Taylor Pfershy

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.

Approved Non-IOE Technical Electives

STRAT 310 – The World Economy

By Evan James

Offered through the business school and counting as a technical elective, STRAT 310 focuses on the world economy. In this class you will learn what challenges face a company conducting business in multiple countries, and what these challenges mean for how the company operates. With so much of today's business being conducted with at least some international component, understanding these challenges is extremely beneficial. Another interesting part of this class is the ever-changing nature of the world's economic state. In class we would discuss current events, what some possible effects could be, and how we anticipated companies might respond to them. The biggest take-away from this class for me was realizing how even the smallest of changes in one country can have massive effects in another.

Intellectual Breadth

SLAVIC312 – Central European Cinema

By Nathan Estes

Central European Cinema is a humanities course offered through the Slavic Language and Literatures department. The class is broken down into two components, discussion and film viewing. Each week you will view a different movie that was filmed and produced in Central Europe and discuss the social and political impacts of the film. The films focus on issues such as characteristics of rescuers during the Holocaust, gender equality under the Communist regime, and religious persecution in the former Yugoslavia. I found the class to be a great way to step outside of the engineering curriculum and learn about subject that I might never have taken the time to explore.

Econ 101 – Principle Econ I

By Sarah Finley

This course focuses on microeconomics, exploring topics such as supply and demand, game theory, competition, and monopolies. It emphasizes both understanding the concepts and theories of the subject as well as performing calculations when given a specific scenario. The class gives students an overview of economics that helps them to better understand the factors impacting businesses and how companies should choose to act when placed in certain situations. The material learned in Econ 101 does not overlap much with the content covered in IOE 201/202, but provides a helpful background for the more complex problems explored in these IOE courses. Overall, Econ 101 provides a great foundation for understanding how businesses interact in the economy and relates directly to the ideas explored in much of the IOE coursework.

English 125 – Writing and Academic Inquiry

By Sarah Finley

Each section of English 125 is run by a different professor, so they can vary greatly from section to section. My section, however, was focused on persuasive academic writing, a skill which could come in handy in engineering jobs when writing proposals or memos. We learned about strategies for persuasion, effective research methods, and techniques for structuring a piece of writing. Due to the small class size, the professor was able to give each student individualized feedback on each piece of writing as well as organize multiple peer review sessions for each assignment, both of which were very helpful in improving my writing skills. I liked that this class investigated some of the practical applications of writing in business, and I feel that the skills I learned will be useful in later classes as well as in a career.

General Electives

ASTRO 102 – Introduction to the Universe

By Morgan Freeby

If you are a student looking to earn some credit to fulfill the General Elective Requirement, I highly recommend taking ASTRO 102. This class is called the Introduction to the Universe. You will learn about everything from the basics of constellations and lunar patterns to the most advanced concepts about black holes and the end of the universe.

Strategically speaking this class is great because it is worth four credits. This means it will help you reach the nine-credit requirement easily. While the course does cover a lot of information fairly rapidly, because it is a GenEd you can take it pass/fail so that it doesn't affect your G.P.A. The homework consists of weekly assignments that generally take about an hour to complete. Exams are non-cumulative and sometimes contain questions that would not require your attendance in class to answer. The hardest part about the class for me was the iClicker questions. The professors liked to throw challenge problems in, or sometimes they just went through them too fast to allow a good amount of time to think. But again, taking the class pass/fail takes the pressure off.

I enjoyed this class because of the content. Stars and the universe never cease to be fascinating. When all your engineering classes seem to be black/white it can be nice to stare into the night sky pondering the existence of a black hole and the expanding universe. Finally I should mention that the class has weekly discussions sometimes held in the Planetarium. And those are really cool.

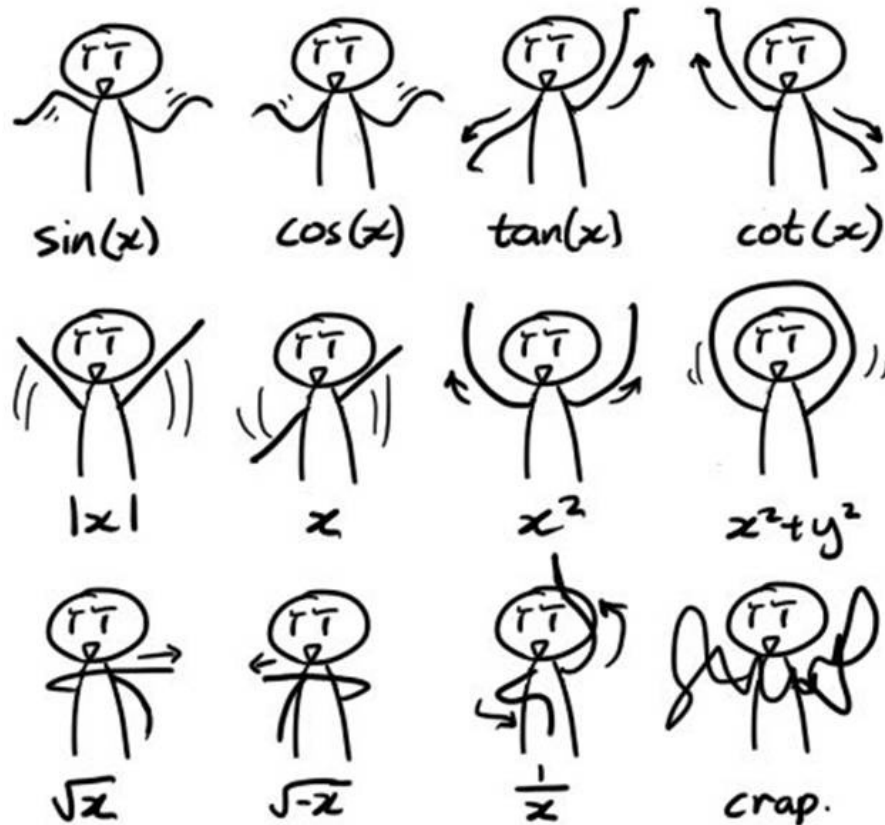
Other

ENGR 260 – Engineering Across Cultures

By Nathan Estes

Engineering Across Cultures is a 1-credit course that is a requirement for the International Minor for Engineers. The purpose of the class is to recognize that engineering is a global profession and discover the international impact of the profession. In this class, you will learn about different aspects of the design process that need to be considered when working outside of the United States. The course culminates in a group project where you get to learn about a foreign culture and create a product to fulfill a need in that country. From a professional perspective, this course helped develop better intercultural awareness, which is something that many employers value.

Dance Class for Engineers



Thanks for reading!