

Industrial Blueprint

-The IOE Student Newsletter-

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A joint venture from APM and IIE

November 2005

Undergraduate Walk-In Counseling Hours

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A Few Words From the Editor . . .

November means two things to me: 1.) it's Thanksgiving time, and 2.) the semester is coming to a close so I'd better stop screwing around. The Thanksgiving aspect rules as I get my annual chance to sit in front of a pile of food and eat until all I want to do is sleep. And, thanks to Thanksgiving Break, I can sleep all I want for a couple days. The semester coming to a close is a different matter, but I don't think people want to hear about it. Instead, I think we should focus on the weather.

Man, it's cold outside. There's actually snow falling from the sky in November. Unfortunately, it's not yet the cool kind of snow that accumulates to allow for some hilarious snowball fights. This snow just gets on your clothes and reminds you of how ridiculously cold it has gotten over the past week. But then, let's look on the positive side of this. All the out-of-state students are finally getting a chance to see the glory of winter in Michigan. They might have thought that So. Cal. was perfection, but I guarantee in two months they'll be singing a new tune. Michigan's winter is a beast unlike any other, and a valuable learning tool. This winter, I plan on learning how few layers of clothes are necessary in order to go sledding, and then I plan on learning how quickly the ER can treat frostbite.

People are always telling me that it's much better to the south, or west, but think of what would happen if the whole planet was warm. Migratory patterns of the birds would be devastated, and so would people who hunt the birds. The rest of us, I think, would be fine. Ice caps?

This Blueprint is chalk-full of fantasticism. With registration just around the corner, this edition is loaded with course reviews to give the eager and curious student a chance to figure out what courses to take, and be a guide for anyone who wants it. Read the articles, talk to the outstanding Peer Counselors (schedules to the left), and remember: you don't have to take all the same courses as your friends. Use this edition as an opportunity to consider exploration.

Love,
Steven Agacinski

Upcoming Events

November 24	THANKSGIVING
November 28	Registration Begins
November 29	Mr. Engineer
December 13	Classes End

Visit the IOE Department Website:
<http://ioe.engin.umich.edu/ugrad.html>

IOE Student Societies

Alpha Pi Mu (APM)

<http://www.engin.umich.edu/soc/apm>

Engineering Global Leadership (EGL) Honor Society

<http://www.engin.umich.edu/students/support/egl/>

Human Factors and Ergonomics Society (HFES)

<http://www.engin.umich.edu/soc/hfes>

Institute of Industrial Engineers (IIE)

<http://www.engin.umich.edu/soc/iie>

Institute for Operations Research & the Management Sciences

<http://www.engin.umich.edu/soc/informs>

Outstanding Multicultural Industrial Engineers (OMIE)

<http://www.engin.umich.edu/soc/omie/>



- Last seen on America's Most Wanted -
The IOE Building

IOE Undergraduate Student Guide

Excerpt from the IOE Department, edited by Franklin Jen

Industrial and Operations Engineering classes are traditionally broken down into six main categories:

Computer and Information Processing: Computers and information systems are important components in most modern systems. Students are introduced to the basic terminology and concepts of information system design, construction, and usage. The values and limitations of computing capabilities are explored. Emphasis is placed on the use of computer hardware and software systems in information processing and on the interface of information systems with management in helping to achieve the objectives of an organization. **Example classes: IOE 373, IOE 474**

Ergonomics: Ergonomics emphasizes the technical knowledge necessary to analyze and predict the performance of humans in human – machine systems. Basic courses cover capabilities and limitations of major human subsystems including cardiovascular, muscular, and cognitive (information processing) systems. Knowledge of these human subsystems is used to aid in the design of effective and safe working environments. **Example classes: IOE 333, IOE 334, IOE 438**

Management Engineering: In the design and implementation of integrated systems, industrial engineers must be able to master the technology of new systems, to understand the technical change process, and to achieve the benefits of such systems. Management engineering courses emphasize the role of people acting as individuals, and in groups, in operating systems. Theories of administration, group dynamics, and human motivation are applied to specific managerial problems related to the establishment, clarification and modification of an organization's objectives. They also cover the design, evaluation, and improvement of human – machine systems for accomplishing these objectives. **Example classes: IOE 421, IOE 422**

Manufacturing Engineering: Manufacturing engineering is concerned with determining how to manufacture engineered products with minimal capital investments and operating costs in facilities safe to both workers and the environment. Students study methods for evaluating production and inventory systems, facility layout, and material handling systems and are prepared to aid in the daily operation of a manufacturing facility while evaluating operations for the future. **Example classes: IOE 441, IOE 447, IOE 449**

Operations Research: Operations Research is an applied science devoted to describing, understanding, and predicting the behavior of systems, and guiding them towards better performance. Courses in this area cover the use of mathematics in constructing models to analyze and design operational systems. Students study a variety of model structures and their application to real world processes such as production, maintenance, inspection, resource allocation, distribution, and scheduling. **Example classes: IOE 202, IOE 310, IOE 416**

Quality Engineering: Industrial and Operations Engineering graduates understand how to cope with uncertainty in the design of engineering systems. In particular, they design quality control systems and apply reliability analysis and experimental design techniques to design better products and processes. **Example classes: IOE 461, IOE 465, IOE 466**

IOE 333 (Ergonomics): Ergo-what?

By Renee Sloan

Ergonomics! Many engineering students probably don't know what ergonomics means, or they think it has something to do with how to build a chair. That's what I thought before taking IOE 333. Ergonomics is the science of applying the knowledge of human/machine/environment interactions to achieve higher productivity and reduce operator fatigue and discomfort. Basically, in a nutshell, ergonomics is the study of the laws of work. Students have the opportunity to learn about the environmental, physiological, and psychological aspects of both physical and mental work. Physical and cognitive ergonomics are the two main fields of study. Within the category of physical ergonomics, students are introduced to the basic concepts of anthropometry, biomechanics, and work physiology. Special topics are usually also covered if time permits; these may include the effects of vibration and investigating the causes of cumulative trauma disorders. The second half of the class focuses on cognitive ergonomics; in particular, information processing. During this part of the term, students are taught how to determine response time, the availability of attention resources, and are introduced to the study of signal detection theory. A small portion of the semester is dedicated to the design of displays, where students learn the 13 principles a good display design must have.

There are two closed book midterms and an open notes and book cumulative final. There are four homework assignments that can be a bit time consuming, but are usually not difficult as long as you go to class and take good notes. No lecture slides are provided, so attending class regularly and taking good notes is extremely important. I can only speak from my experience, but if you have the opportunity to take the class when Professor Yili Liu is teaching, I highly recommend it. He is an excellent speaker and does a very good job of keeping your attention; he was awarded the Professor of the Year award last semester. Regardless of the professor teaching, IOE 333 gives an excellent overview to a field which many engineers know little about. Many companies are currently looking for engineers with the knowledge of safety management, which is closely tied to ergonomics, so having this knowledge will set you apart from your peers. Besides that, it's required to graduate, so be sure to take it!

IOE 310 (Optimization Methods)

By Arthur Syailendra

Before I took IOE 310, I always thought that an Industrial Engineer would do only two things: human factors (ergonomics) or manufacturing practices. Taking IOE 202 had given me some notion about what will be covered in IOE 310. However, it was not before I took the IOE 310 that I realize there are other practices of the Industrial Engineer.

IOE 310 taught me not only how to use Microsoft Excel to solve simple optimization problems or AMPL programming to solve more complicated tasks. I learned not only optimization tools but also the ideas (read: math) behind them. IOE 310 explained the basic steps and method that Excel or AMPL actually performs to get the result. One might ask, "What's the point of doing some complicated calculation if your computer can solve it?" Well, I can argue that you will never be a master if you don't understand the basics. Moreover, the tools that were taught in IOE 310 will be used in most of the 400's level IOE classes. I am a senior right now and I haven't been to a class where the instructors did not mention anything about "OPTIMIZATION."

I highly recommend any junior to take this class, not only because it is required but also because it is a vital arsenal to shape your mindset. Furthermore, if you like math and you are wondering how to maximize your math skills in an Industrial Engineering field, you definitely have to take this class. By and large, I truly believe that in any Industrial Engineer's field that you may pursue, you should have these three words in your mind: "OPTIMIZE, OPTIMUM, OPTIMA." And the best way to start having that is by taking IOE 310.

IOE 373 (Data Processing)

By Carolyn Bertelsen

IOE 373 is required class I took in Winter 2005 with Professor Dan Reaume. The class consists of two 90 min lectures, plus a lab section. The time class is at, 5:00-6:30pm, seemed like an annoyance at first, but eventually it left me with large breaks in my schedule to complete homework. The lab section was decently useful, allowing time to finish up homework and fix last minute bugs. It may be daunting to face another programming class after Engin 101. Fear not, the language used, Visual Basic, is much easier and more fun than C++. With VB.Net, the programs made in class looked like actual Windows programs. The designing of the Windows form allowed for a lot of visual creativity.

The weekly homework assignments typically consist of programming problems and theoretical questions. Each assignment increases in difficulty, naturally, and more than half of the homeworks focused on a particular topic. I liked seeing assignments that were built off of each other. Building up can be a good thing or a bad thing, but it helped for me to get to know my code for each assignment very well. The culmination of the assignments was the Structured Query Language (SQL) project. SQL is used for creating, changing, and managing databases. Also included in the grade are quizzes, a lab test, participation, and three midterms. This class taught me that programming can be fun, and Professor Reaume explained concepts clearly and was helpful.

IOE 334 (Ergonomics Lab): From the Plant Floor

By Bill Muscat

On more than one occasion, I've walked away from a class wondering, "Where would I ever use that information?" It often becomes increasingly difficult to justify certain credits taken during the course of my career here at the University of Michigan (Psych 111 anyone?). As I progressed through academia though, I found IOE 334 to be a lesson in real world applications. Over the past summer, I had the opportunity of working on an assembly line for a furniture manufacturing company. Within my first week of work, the principles that my class had experimented with were exemplified in everything we did. Regulations such as requiring safety glasses and earplugs were a few of the effects shown from concepts we had covered in class. I often found myself explaining the reasoning behind the regulations to my coworkers, based on work that I had completed in IOE 334. Not only did I see the effects of the class work, but I also got to work with the people who were affected by ergonomic policies.

A prime example of this related to the sound experiment that was completed in class. During the course of the experiment, one of the tests that had to be completed was an analysis of the noise level in a simulated work place. During the experiment, there was a drill press and several other objects making noise, and what stuck out in my mind was an air hose that was discharging compressed air. Upon conclusion of the experiment I remember thinking, "You'd never have an air hose in a work environment just discharging air." Within the first day of work however, it occurred to me that the constant discharge of air from the screwdrivers we were using had exactly the same effect as that of the hose we had used in class.

Other examples like this would occur throughout the summer. At one point during the summer, lights were brought in to help illuminate areas that required higher precision work. The work physiology experiment that we completed in class also showed its relevance. Stress on the body is a serious factor that comes into play when one is working in a ninety-nine degree factory for ten hours in middle of July. I found myself straining to keep up with the pace of the line as a healthy, twenty-one year-old male. It was even more difficult on the other older and less-able coworkers. I got to work with a woman who had to deal with pain daily because she developed carpal-tunnel syndrome working for so many years on the same line. I got to know a guy that just started full-time at that current plant, who'd lost some of his hearing working at a previous company that allowed the workers to play music while working in a similar environment. It's getting to know the people and how they're lives are affected that brings the concepts learned in class to life.

For the class itself however, I found that writing the technical reports to be the most frustrating part of the class. The level of technicality and precision required for an acceptable grade is overwhelming. The ability to write exactly what the graders are looking for in terms of specific writing style is more important than writing a coercive and coherent technical report. The course pack is also difficult to understand, with several pages of irrelevant information and grammatical errors. I often, however, found office hours to be extremely helpful in clearing up some of the confusion I had. Overall, the class taught me more than I had thought at first. Its real world relevance brings home exactly what ergonomics is and its incorporation in a real life setting.

IOE 366 (Linear Statistical Models)

By Adam Clarke

IOE 366 is a 7 week, 2 credit course (3 lecture hours and a 1 hour Monday lab every week) often coupled with IOE 316. It is the first course in this sequence and what many IOE's say is "the easier of the two." The course is touted as an extension of IOE 265 in many respects, as the same textbook is used. However, over and above very minor correlations to items like Z-scores and t-tests, all of the material taught in IOE 366 is veritably new for the student. The class immediately jumps into analyses of variance and then leads into regressions. It takes a few lectures and homework problems to effectively grasp the new statistics taught in the class, but I for one found that after the first model was laid out and understood, the rest followed suit. Both the main text book (Probability and Statistics for Engineering and the Sciences by Devore and Thompson) and the GSI's (Shervin Ahmadbeygi and Esra Sisikoglu) were invaluable in the understanding of the comprehensive materials taught in the class.

The lab-based material taught on the statistical analysis program MINITAB always aided in understanding of the material and more complex analyses. Weekly homework, with 4-6 book problems, a weekly lab assignment, and a midterm and a final were required of the student. The book problems were somewhat comprehensive, with many parts – this seemed somewhat tedious, it enhanced knowledge of the new material. Professor Jin allowed the class to do the assignments in MINITAB if we so chose, which sometimes helped or hindered progress. The lab assignments were based on MINITAB or Visual Statistics and never took more than two hours to accomplish, steeped in material learned in the 1 hour Monday lab. Exams seemed more of a crunch than anything else as the wealth of individual analyses on different parameters of multiple models led to a wealth of information for the exam to draw from. Students were allowed to use their textbooks, notes and old homework for exams which translated into those with better organizational skills usually having the upper hand. IOE 366 brought with it a somewhat large workload with a logical learning material layout for its 7 week duration. I would advise any student looking to take this class to make sure that they stay organized, keep up with chapter reading and begin studying for exams early.

IOE 425 (Manufacturing Strategies)

By Jia Tay

In my opinion, this is one of the courses that you would not want to graduate with an IOE degree at the U of M without. The course introduces you to one of the most successful manufacturing strategies in operations: lean manufacturing. Lean manufacturing is a set of philosophies developed and used by Toyota since the 1940s, and today, they are still one of the world's leading manufacturing companies in the automotive industry. Lean manufacturing is based on the idea of reducing waste, improving efficiency and saving costs, which does not only apply on the factory floor.

This is a half-term course, offered in both half-terms in the Fall and Winter terms. In this course, you learn about the concepts and elements of a lean manufacturing system based on the Toyota Production System Model. You also learn how to assess operations throughput and quality capabilities, identify improvement opportunities and potential benefits through the application of lean tools. The material is very light with easy-to-understand concepts and no confusing formulas to remember or tough definitions to memorize. There are two team projects for this course, where you use the strategies you have acquired in the course to develop plans and recommendations to improve the efficiency of the factory processes. These projects are aimed at giving you a chance to experience working in a team setting to execute lean analysis and improvement proposal, and to apply your knowledge on real world situations at a basic level. Unlike most other team projects you have been on, these projects are short and not time consuming.

This is a very fun, practical, and enriching class! Especially if you are going into the manufacturing industry or even consulting after graduation, I highly recommend you to take it (this is one of the things employers are looking for). If you are not going into the manufacturing industry after graduation, I would also recommend you to take this course (it is highly applicable everywhere, and hey, it is an easy course!). I give it ★★★★★.

IOE 432: IE Instrumentation Methods

By Jevon Reynolds

Let's admit it; we IOEs are often ridiculed by other engineering majors for our unfortunate deficit of hands-on labs. By taking IOE 432, "Instrumentation of IEs," we are one step closer towards making those other majors eat their often misguided words of jealousy. The course teaches basic knowledge about a variety of instruments including transducers, accelerometers and oscilloscopes. The instructor Chuck Woolley first holds a 2-hour pre-lab lecture followed by the actual 2-hour lab later on in the same week. Lab reports along with class participation comprise the curriculum of the course. As for the reports themselves, they are much more informal than those in IOE 334 and are done individually. If you would like to take an ergonomics course that's not too strenuous yet informative, IOE 432 is a good choice.

IOE 466 (Statistical Quality Control)

By Samir Quraeshi

IOE 466 is a wonderful class to take. Even if you did not enjoy IOE 265 or 366, you may find some of the concepts learned in the course very beneficial. If you enjoyed the aforementioned courses, then I strongly recommend that you take this course. The class really ties in all the basic statistical tools that you have learned in previous classes to make them relevant to industry. You learn many quality improvement techniques. An example of these techniques is a control chart, which assesses the stability of a process, and analyzes several different attributes including averages, proportions, and variations. Many other beneficial tools are learned in this course, which will make you much more attractive to future employers. I for one used many of the skills learned in the course in my internship this past summer at Pfizer Global Manufacturing, and saved the company a lot of money in the process.

I took the class in the Winter 2005 Semester with Jing Li. She was very knowledgeable about the subject, and very approachable if you have any questions or concerns as the course moves forward. There were great examples presented in lecture that helped me better understand the concepts in the textbook. The class meets for an hour and a half twice a week, and if you are lucky, will not meet at 9:00 a.m., as it did when I took the course. The homework is very doable, in that it stresses the concepts learned in lecture that week in 6 or 7 problems. The homework does not command an incredible amount of time as is the case with other courses. If you are comfortable with the homework, then the exams should not be too difficult, as the questions and concepts are similar. The grading in the class was based on 2 exams and the approximately 10 homework assignments.

Like any other IOE course, I strongly recommend you work in teams to better understand the material. One comment I must add is that while I recommend taking IOE 466, this does not mean that you should not take IOE 461, Six Sigma, because different concepts are introduced, and IOE 461 also incorporates business cases, which are very useful. When choosing classes, do not forget to consider IOE 466.....you will not regret it!

IOE 441 (Production and Inventory Control)

By Jingjin Xie

I took IOE 441 Product and Inventory Control last semester (Winter 2005) instructed by Professor Goker Aydin. It was one of my favorite IOE classes so far and studying for it has become part of my good memory.

This course talks mainly about the basic models and techniques for managing inventory systems and for planning production. In specific, we learned about Forecasting, Aggregate & Capacity Planning, Deterministic & Stochastic Inventory Models, Supply Chain Management, Push & Pull Production Control, Operation Scheduling, etc. This may sound a little bit too theoretical and doesn't really make sense to some people. You are right! It wouldn't be any use if you didn't put it into real use. But the good thing is Professor Aydin puts the stuff in an interesting and understandable way so that most students can learn and enjoy at the same time. What's more important, there are around 5 or 6 case studies (usually done with groups of 4-5 students) during the whole semester and each focuses on the subject which we talk about during that time. Cases are usually realistic business problems faced by a hypothetical (or real) firm, and Professor Aydin usually holds a discussion right after we submit the reports to give us a guideline and let students share their ideas about the case. One thing I want to mention here is that the notes are really clear and in good order (which would be agreed amongst most students I think)! Professor Aydin usually uses transparencies which are the same as what we print from Ctools before each class and writes notes down on them during the class. I personally enjoy taking notes in this way which allow me to interact with the Professor and understand the material easily.

As you can tell, I truly recommend all of you guys to take this class if you are somewhat interested in or just curious about what supply chain is about. And make sure you are in Professor Goker Aydin's class!!

Interview Schminter-view

By Kelly Koenig

You are refined, dressed to impress, and ready to land a job that will finally put some nice cold cash into your pockets. But are you prepared? Interviews can either be an extremely awkward experience or a process where both you and the interviewer learn how your skills and knowledge can better both you and the company. If you have landed an interview, congratulations, your effort in school, acquired skills, and work experience have made you a qualified candidate. Now it is up to you to prove that you would indeed be a prized asset to that company. So how exactly do you do that? Well, to start you should never enter an interview without understanding the format of the interview and truly knowing the answer to these three questions:

1. Why should the company hire you?
2. Why do you want to work for the company?
3. Why you are interested in the position.

It seems obvious, but according to the Career Resource Center, several interviewers have commented on the inability of students to succinctly. The company's website is the best resource to use before an interview and will help you to tailor these questions to best fit both the company and the position. The company will often list the skills it is looking for in its candidates either in the job description on Engintrak or on its website. It is important that during the interview you reveal to the interviewer that you possess these skills and could apply them if hired by the company. In order to do this, reflect on key past experiences where

you have demonstrated the traits that the position requires prior to the interview. You should focus on times where you were personally challenged so that you can demonstrate your true capabilities to the interviewer. It is also important to demonstrate how your individual contribution to that experience affected the end result. The following are some common questions asked during interviews:

Tell me a little about yourself.

What are your strengths

What are your weaknesses

Tell me about a time you influenced the outcome of a project by taking a leadership role.

Tell me about a time you had to make a difficult decision.

These questions were excerpted from an interviewing packet that the Career Resource Center, located in the Student Activities Building on Central Campus, has available for all students. There are also many resources online with practice behavioral interview questions. The most important thing to remember, while enclosed in the claustrophobic interviewing rooms our fine campus has to offer is that the interviewer across the table wants you to succeed. He didn't travel all the way to Michigan to grill candidates and leave them without a job offer. Be yourself, be confident, and be prepared. Doing so will result in a successful interview and money in your wallet.

Bored? Between the hours of 1:30 and 3:30 on Wednesday?

If so look for Steve Agacinski in the IOE Student Lounge, accepting all visitors during an awkward 2 hour break in his day. He's dubbing these "open office hours" despite a lack of affiliated organization, administrative approval, or true purpose. Talk about life, the world, school, whatever! Maybe you'll be even mentioned in an up-coming article.

Note: Steven Agacinski is not accredited by any organization.

NERS 211 (Introduction to Nuclear Engineering and Radiological Sciences)

by Alex Wang

“This course will discuss different forms of energy, the history of nuclear energy, the fundamentals of fission and fusion nuclear power, radiological health applications, and electromagnetic radiation in the environment. Current topics in the media such as radon, radioactive waste, and nuclear proliferation will also be covered.”

The above course description for NERS 211 sounds pretty hardcore, but as one of the options for a non-IOE core class, NERS 211 is ironically the most popular non-IOE class taken by IOE students. What other class would combine a manic teacher that looks like the reincarnate of Albert Einstein with discussions about how Pepto-Bismol is a product of radioactive decay, a movie about nuclear bombs, and test scores with averages of 29?

In my opinion, Professor Fleming is the MAIN reason to attend class. If you DO attend class, not only will you receive a 35-page handout each class period (think of the trees!), you will get to listen to him discuss extremely interesting current events and relevant real-life applications of nuclear topics. Most of the material is mad-crazy complicated (hence the test average of 29) and just looking at the book (or the even more arcane “Chart of the Nuclides”) will probably induce nausea or cramps. However, rest assured because the final is take-home, and if you ace the final, you will get a decent grade in the class.

There are sporadic homework assignments here and chances to boost your grade with extra credit such as writing a one page report or giving a brief presentation about a nuclear topic of your choice. The work is pretty minimal compared to killer courses such as ME 211, and Professor Fleming, with his idiosyncrasies (once, he stuffed my extra credit report down his shirt once because he didn’t know where to put it) and odd gesticulations, is just a genius in his own right. Unfortunately, he’s about to retire (for the third time, apparently) so make sure to take this class if you love all things nuclear and have a penchant for old professors with crazy hair!

MSE 211 (Introduction to Materials and Manufacturing): Materials, materials...

By Minjie Yu

From atomic bonding to phase transformations, MSE 220 is a great introductory course for Material Science Engineering. If you are pondering about which non-IOE engineering course to take, ponder no more. MSE 220 – Introduction to Materials and Manufacturing is definitely a class you should seriously consider.

First of all, out of all the options we have, this course is most probably, in my opinion, the most fun, most comprehensive, and most interesting (of course this heavily depends on which professor you have). Moreover, as long as you have the slightest interest in Material Science Engineering, or are intrigued by what Material Science Engineers dabble in, then there should not be any hesitation in your decision making. MSE 220 serves as a great platform for exploring the realms of Material Science Engineering, as it provides a broad spectrum of what Material Science Engineers deal with.

The course can be broken down into 5 “chunks”. Initially, it starts out with atomic bonding and the various crystal structures of respective materials. Then it progresses towards how these relates to defects, material diffusion, mechanical properties, deformation and material failure. The third part moves into Phase Diagrams and Transformations. There is only one chapter on this; however, it is probably the trickiest part of the course; do pay extra attention if you intend to score.

The forth part introduces various materials, mainly of Alloys, Ceramics, Polymers and Composites (i.e. reinforced fiberglass). Finally, the class finishes off with electrical properties and semi-conductivity of materials.

The course does not really go very much in-depth into any topic; the tools you’d probably need are just basic physics and decent comprehensive skills. In a nutshell, this should be an interesting and straight forward introductory course for Materials Science. I took this course in Spring ’05, so perhaps the syllabus may differ slightly. But yeah, definitely give this course some consideration. Hope this helps!!!

Senior Spotlights **Emily Anderson**

By Kelly Koenig

Margo de Naray



Future Plans: Graduate this December and start work for Intel in Chandler, AZ on January 23, 2006. After 2-3 years of work, get MBA. Then work abroad.
Favorite IOE class: IOE 425

Least favorite IOE class: IOE 265

Recommendations to underclassman:

Find a balance between having fun and concentrating on school. Working too hard will sometimes burn yourself out which is often more harmful than if you just take a break.

One thing IOE's can't live without: 1610 IOE – where else we hold 90% of our classes?

A Blue parking pass... wait, we already do that...

Favorite spot in Ann Arbor: Rush Street or the Chocolate Café (best chocolate covered raisins)

Favorite professor and why: Professor Fixson because he put up with all my complaining back in the day and I think he's one of the most genuine people in the department.

Best place to study: Sweetwaters café downtown



Future Plans: Find a job that I enjoy, buy a house, and finish an iron-man.
Favorite IOE Class and Why:

IOE 425 and IOE 461 because they are the most applicable to a future job.

Least Favorite IOE Class and Why:

IOE 452 Corporate Finance

Piece of Advice to Underclassmen:

Take part in the simultaneous graduate and undergraduate program called SGUS. You receive your master's degree in five years. Another tip is to schedule one or two harder class with a couple of easier classes so you are not extremely stressed out. Definitely don't try to take a whole bunch of 300 level courses together.

One Thing You Can't Live Without:

IOE t-shirt

Favorite Professor: Professor Hammett.

He has a great teaching style even though he is a little fast paced at times.

Favorite Spot in Ann Arbor: Living off campus at Briar Cove. It has a pool, spa, fireplace, work out facility, and so many amenities you just don't get on campus.

Best Place to Study: Espresso Royale off campus.

Kelly Koenig



Future Plans: I will be moving to Chicago and taking a job as a consultant. After a couple of years I would like to get an MBA and return to consulting.
Favorite IOE Class and Why: Definitely IOE 461. It is so applicable to problems you will encounter once you

enter the workforce and really teaches you how to analyze complex problems. I also enjoyed IOE 452, Corporate Finance. Even though while I was in it I thought it was challenging, I learned a great deal from the course.

Least Favorite Class and Why: IOE 466 because I didn't really see it as being useful once I graduated. I will admit, however, it does help knowing it before you take IOE 461.

Piece of Advice to Underclassmen: Start thinking now what type of field you want to work in when you graduate and take classes that apply to that field. Also try to take courses that will differentiate you from the rest of the IOEs who all take the same tech electives. If you take courses you are actually going to use when you graduate, it will help you that much more. Oh yea and during internship fair Junior year, treat it as if it is a career fair. Really try to work for a company you would like to work for upon graduation. (gets rid of the stress of trying to find a job as a senior).

One Thing You Can't Live Without: Actually two things, good friends and coffee. If I didn't have these I couldn't function.

Favorite Professor: I would have to say Professor Hammett. He is interesting to listen to and you can apply what he teaches. Favorite GSI would go hands down to Damon P. Williams. If you haven't had him as a GSI you have definitely been deprived.

Favorite Spot in Ann Arbor: Ricks? Just kidding, I would have to say it's a tie between Michigan Stadium and the Diag.

Best Place to Study: Coffee shops or the Dude.



IOE Class Schedule for Winter 2006

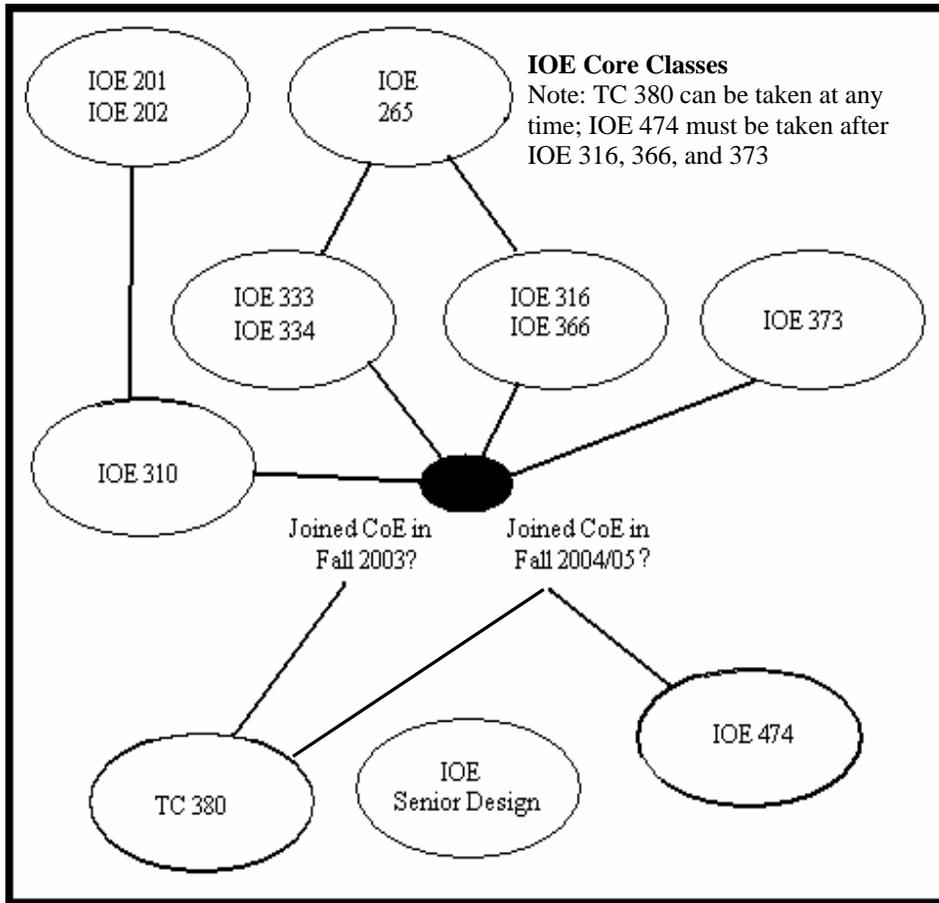
Course Title	Cat#	Cr	Prereqs	Lab Fee
CLASS# CODE CMP SEC	DAYS	CLASS TIME	LOCATION	INSTRUCTOR

Econ Dec Making	201	2.00		
11013 P R LEC 001	MW	130-330PM	1610 IOE	Kaufman
MEETS THE FIRST HALF OF THE TERM.				
Operations Modeling	202	2.00		
11014 P R LEC 001	MW	130-330PM	1610 IOE	Saigal
MEETS THE SECOND HALF OF THE TERM.				
Prob & Stat Engr	265	4.00		
STUDENTS ELECTING LAB (101-107) WILL BE AUTO-ENROLLED IN LECTURE 100.				
11015 A R LEC 100	MW	9-1030	1610 IOE	
11016 P R LAB 101	T	1230-130PM	G610 IOE	
11017 P R LAB 102	T	130-230PM	G610 IOE	
11018 P R LAB 103	T	230-330PM	G610 IOE	
11019 P R LAB 104	T	330-430PM	G610 IOE	
11020 P R LAB 105	T	430-530PM	G610 IOE	
11021 P R LAB 106	T	1030-1130	G610 IOE	
27822 P R LAB 107	T	1130-1230PM	G610 IOE	
Intro to Optim Meth	310	4.00		
STUDENTS ARE AUTO-ENROLLED IN LECTURE WHEN THEY ELECT A LAB.				
11022 A R LEC 001	TTH	9-1030	1610 IOE	Sharma
11023 P R LAB 002	W	830-930	G610 IOE	
11024 P R LAB 003	W	930-1030	G610 IOE	
11025 P R LAB 004	W	1030-1130	G610 IOE	
11026 P R LAB 005	W	1130-1230PM	G610 IOE	
11027 P R LAB 006	W	1230-130PM	G610 IOE	
11028 P R LAB 007	W	130-230PM	G610 IOE	
Intro Markov Proc	316	2.00		
11029 P R LEC 001	TTH	1030-12PM	1610 IOE	Kaufman
P R LEC 001	F	1230-130PM	1610 IOE	
MEETS THE SECOND HALF OF THE TERM.				
Ergonomics	333	3.00	P/A IOE 265	
11030 P R LEC 001	MW	12-130PM	1610 IOE	Liu
Ergonomics Lab	334	1.00	P/A IOE 333	
THE ROPES CHALLENGE COURSE FOR ALL SECTIONS OF IOE 334 WILL BE HELD ON SAT, JAN 15, 2005, 8-11:30AM AT THE U-M COLISEUM. FEE IS \$29.				
11031 P LAB 001	M	530-8PM	G699 IOE	Kantowitz
11032 P LAB 002	T	130-4PM	G699 IOE	Kantowitz
11033 P LAB 003	T	430-7PM	G699 IOE	
11034 P LAB 004	T	730-10PM	G699 IOE	
11035 P LAB 005	W	430-7PM	G699 IOE	
11036 P LAB 006	W	730-10PM	G699 IOE	
Linear Stat Models	366	2.00		
IOE 366 MEETS THE FIRST HALF OF THE TERM. STUDENTS ARE AUTO-ENROLLED IN LEC WHEN THEY ELECT A LAB.				
11038 A R LEC 001	TTH	1030-12PM	1610 IOE	Herrin
11039 P R LAB 002	M	930-1030	G610 IOE	
11040 P R LAB 003	M	1030-1130	G610 IOE	
11041 P R LAB 004	M	1130-1230PM	G610 IOE	
11042 P R LAB 005	M	1230-130PM	G610 IOE	
11043 P R LAB 006	M	330-430PM	G610 IOE	
Data Processing	373	4.00	ENGR 101	
STUDENTS ARE AUTO-ENROLLED IN LECTURE WHEN THEY ELECT A LAB.				
11045 A R LEC 001	MW	5-630PM	AUD CHRYS	Reaume
11046 P R LAB 002	F	930-1030	G610 IOE	
11047 P R LAB 003	F	1030-1130	G610 IOE	

11048	P R	LAB	004	F	1130-1230PM	G610	IOE	
11049	P R	LAB	005	F	1230-130PM	G610	IOE	
11050	P R	LAB	006	F	130-230PM	G610	IOE	
11051	P R	LAB	007	F	230-330PM	G610	IOE	
Queueing Systems				416	2.00			
25199	P R	LEC	001	M	5-7PM	1680	IOE	Alden
	P R	LEC	001	W	530-730PM	1680	IOE	
MEETS SECOND HALF OF THE TERM.								
Entrepreneurship				422	3.00		SR.STD.	
22296	P R	LEC	001	TTH	230-4PM	1017	DOW	Ludwig
NOT FOR GRADUATE CREDIT.								
Practicum Prod & Srv				424	4.00			
11052	P R	LEC	001	T	530-730PM	133	CHRY	Cristiano
Mfg Strategies				425	2.00			
11053	P R	LEC	001	MW	330-530PM	1610	IOE	Anderson
MEETS FIRST HALF OF THE TERM.								
23826	P R	LEC	002	MW	330-530PM	1610	IOE	Spiegel
MEETS SECOND HALF OF THE TERM.								
Human Factors				436	3.00			
11054	P R	LEC	001	MW	130-3PM	1014	DOW	Green
Occup Safety Mgt				438	2.00			
16513	P R	LEC	001	M	5-7PM	1504	GGBL	
	P R	LEC	001	T	5-7PM	1504	GGBL	
MEETS FIRST HALF OF THE TERM								
Prod & Inv Contrl				441	3.00			
11055	P R	LEC	001	TTH	130-3PM	1610	IOE	Aydin
Matl Handling				449	2.00			
23827	P R	LEC	001	TTH	3-5PM	1680	IOE	Carlo
MEETS FIRST HALF OF THE TERM.								
Derivative Instrumts				453	3.00			
16512	P R	LEC	001	MW	1030-12PM	1610	IOE	Babich
Design of Experimnts				465	3.00			
25200	P R	LEC	001	TTH	9-1030	1005	DOW	Garcia-Guzman
Stat Quality Control				466	3.00			
11056	P R	LEC	001	TTH	12-130PM	1610	IOE	Jin
Simulation				474	4.00			
STUDENTS ARE AUTO-ENROLLED IN LECTURE WHEN THEY ELECT A LAB.								
11057	A R	LEC	001	TTH	3-430PM	1610	IOE	Tsimhoni
11058	P R	LAB	002	W	230-330PM	G610	IOE	
11059	P R	LAB	003	W	330-430PM	G610	IOE	
11060	P R	LAB	004	W	430-530PM	G610	IOE	
11061	P R	LAB	005	W	530-630PM	G610	IOE	
Practicum Hosp Sys				481	4.00			
11062	P R	LEC	001	M	7-9PM	1680	IOE	Coffey
UG Directed Study				490	2.00-4.00		PER.	INSTR.
	I	IND	+		ARR	ARR		
Spec Top Ind Engr				491	3.00			
Senior Des Proj				499	4.00		SR.STD&P.I.	
	I	IND	+		ARR	ARR		

IOE Class Guide

By Franklin Jen



*Options for 6 additional technical electives:

A. Biological and Health Sciences

- a. Anatomy: Any 400-level course or above.
- b. Biology: Any course above and including Biology 162 (3 credits max from AP)
- c. Any course in Epidemiology, Environmental and Industrial Health, or Health Services Management and Policy.
- d. Physiology: Any 400-level course or above.
- e. Kinesiology: MOVESCI 330, any 400 or above level course in MOVESCI or Kinesiology (KIN) which has prerequisites.

B. Mathematical and Physical Sciences

- f. Mathematics: Any 300-level course or above in the CoE Bulletin (except Math 333, 385, 431, and Math/Stat 425).
- g. Chemistry: Any 300-level course of above in the CoE Bulletin.
- h. Physics: Any 400-level course or above in the CoE Bulletin.
- i. Statistics: Any 500-level course or above in the CoE Bulletin.

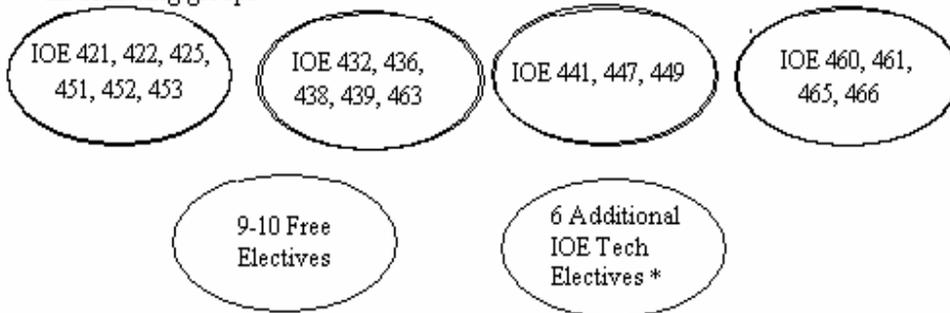
C. Engineering

- j. Engin 477, Tech Comm 450, ME 240, ME 250 and any 300 or above level course in Aero, AOSS, Bio-Medical, ChemE, CEE, EECS, ME (except ME 401 / Mfg 402), MSE, NAME, and NERS.

D. Business and Social Sciences

- k. Business: Accounting 271, 272, 471 and any 300 or above level course in Accounting (except ACC / CIS 301), Finance, or Marketing. Also approved: LHC 305, 306, 321; BIT 320; CIS 320, 342; CSIB 310 and 361.
- l. Economics: Any 400-level course or above (except Econ 404 & 405).
- m. Psychology 230/330, 240/340, 345 and/or any 400 or above level course not designated as "practicum", "experimental", "tutorial", or "independent study."

IOE Technical Electives: Select 15 hours - at least 1 course must be from three of the following groups



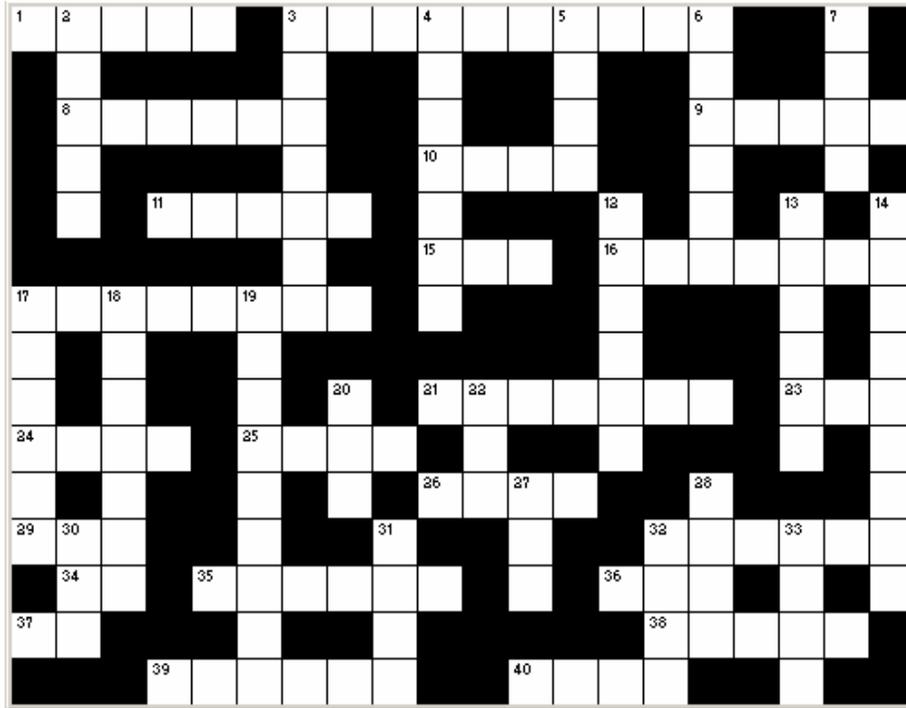
Non-IOE Engineering Core
 12 credits from at least 3 groups

1. ME 211, CEE 211, or ME 240
2. ME 230, ChE 230, or ME 235
3. MSE 220 or ME 382
4. BioE 458, EECS 314, or EECS 270
5. CEE 260 or NERS 211
6. EECS 280 or EECS 283

The Back Page

IOE Crossword

- Better than the Last -



Down

- 2 *Hello, _____!*
 3 Animal that can lick it's own ears
 4 U of M Theatre Department show *The _____ Project*
 5 IOE Academic Secretary
 6 Father of a branch of Geometry
 7 Ann Arbor neighbor nickname
 12 Spanish dictator
 13 Online search engine
 14 *Farewell to Arms* author
 17 Campbell's soup variety
 18 U of M Musical Theatre Department's December production
 19 *He didn't start the fire*
 20 Greek god born with goat legs and feet, horns, and a furry human upper body
 22 Road (abbr.)
 27 Australian flightless bird
 28 To remove the outer covering or skin of with a knife or similar instrument
 30 electrocardiogram (abbr.)
 31 The ugly duckling turned into a _____
 32 The rock you can eat
 33 2005 APM Outstanding GSI Award recipient

Across:

- 1 to concede as true or valid: make an admission of
 3 Beheader
 8 UMEC President
 9 A helmet; also, toothpaste brand
 10 Mamma Mia inspiration
 11 A clumsy social error; a faux pas
 15 IOE Student Society
 16 Old Spice Antiperspirant
 17 A pre-pickled pickle
 21 Material Science Official Subject Code
 23 *Steal My Sunshine* artists
 24 Pizza place on South University
 25 Continuous improvement manufacturing
 26 Type of IOE Counselor that disperses audits
 29 0.00840054 U.S. dollars
 32 The world's largest desert
 34 Kentucky (abbr.)
 35 Detroit
 36 Vestibule of the head
 37 Periodic table's symbol for silver
 38 Communist leader V. I.
 39 Spock's species in *Star Trek*
 40 Tall metal pole that supports the sail on a sailboat

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Note: The opinions expressed herein do not necessarily reflect those of the Industrial and Operation Engineering Department at the University of Michigan—Ann Arbor. Any questions or comments should be submitted to IOEBlueprintGroup@umich.edu

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