Industrial Blueprint

-The IOE Student Newsletter-

Volume 18, Issue No. 2 | A joint venture from APM and IIE | January 2005

Undergraduate Walk-In Counseling Hours

Professor Yili Liu (Program Advisor):
Wednesdays 12:30-2pm & by appointment
In G622 IOE
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Ken Agacinski (IOE/EGL Peer Counselor):
Tuesdays 12-1:30pm, 3-5pm
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Kristen Neubauer (IOE/EGL Peer Counselor):
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Tuesdays 11am-12pm
Thursdays 11am-12pm, 1:30-5pm
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Pedro Vaz (IOE/EGL Peer Counselor):
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Pam Linderman (IOE Student Advisor):
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Upcoming Events

January 28	Senior Logo Deadline
Jan 30-Feb 15	Blood Battle
February 3	Internship Fair
February 5	Hockey at the Joe

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

A Few Words From the Editor . . .

Welcome back to the IOE Blueprint! I know, it's been a few months, but we had a great time, didn't we? We were going to call, but we lost your number.

Now that it's January and Ryan Rindler has been deported (read: is studying abroad), I'm in charge…and I've decided to make a few changes:

1. The Blueprint will henceforth be known as the "Bleuprint." This will help it attract a more sophisticated readership, such as business school students and those IOEs with minors in French.
2. The Bleuprint will be published monthly.* Not semi-monthly or semesterly—once every actual calendar month (Decembruary and Maytober are not included). Renew your subscriptions now.
3. The Bleuprint will maintain integrity and professionalism in journalism at all times. It build and maintain its reputation a respected publication on campus. Ha...just kidding about this one, actually.

You may also notice that this issue has more pages than those in the past (or you may not remember those in the past…it has been a while). That's because we were working out in the off-season and bulking up for our big "January Super Special." We've taken the best articles submitted last semester (well, all of them) and saved them up for this shining moment.

I do feel compelled to warn you, before you open this, that unlike past Blueprints, *there is no crossword puzzle in this issue*. Once again, if you are only looking for a crossword puzzle to do in class, *you are not going to find it here*. If you can't bear the thought of a "paper" without a puzzle, bug your favorite Alpha Pi Mu member and get them to contribute one for next month. (Better yet, bug an IIE member and get them to contribute something… anything...)

What you will instead find in this issue are course reviews, a few bad jokes, a "special" recipe section, and a picture of a monkey wearing glasses. We at the Blueprint humbly submit these for your class-time entertainment.

Cheers,
Julia Angstrom

*Exceptions may be made for months in which I have exams, months with bad weather, and months near the beginning and end of the semester.

Focus on an IOE Student Society:

Outstanding Multicultural Industrial Engineers (OMIE)

by Sean Mikles

OMIE

From it's website: "OMIE was created in 2002 for the purpose of improving the successful preparation of multicultural industrial engineering students at the University of Michigan. Its mission is to assist the University in its goal to increase the number of minority industrial engineering students who excel academically, succeed professionally, and positively impact the community. OMIE hopes to accomplish this goal through building partnerships with students, alumni, faculty and corporations."

OMIE aims to provide the resources needed to help engineering succeed academically and professionally, to increase the awareness of industrial engineering among minority students, and to provide students with networking opportunities. OMIE exposes its members to the many different careers available in the industrial engineering field. The society sponsors events such as graduate student panels and recruiter presentations to keep members informed about the opportunities available at the university and in the business world. Members also attend workshops, mixers, and other activities to help develop their skills and to meet with companies, professors, and fellow students.

For information on how to join (or just information about the society in general), visit their website at http://www.engin.umich.edu/soc/omie

The IOE Building, our home!

Fall 2004 OMIE Officers

President	Kimberly Lemieux
Vice President	Shannon Flowers
Treasurer	Vanessa Hudson
Programs Chair	Kavon Stewart

Half Full or Half Empty?

To the optimist, the glass is half full.

To the pessimist, the glass is half empty.

To the engineer, the glass is twice as big as it needs to be.

Get Involved In IOE

Check Out These Websites. .

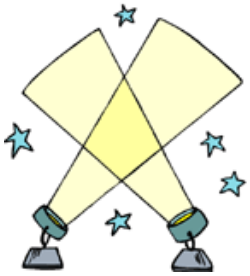
Human Factors and Ergonomics Society
http://www.engin.umich.edu/soc/hfes
Institute of Industrial Engineers (IIE)
http://www.engin.umich.edu/soc/iie
Outstanding Multicultural Industrial Engineers (OMIE)
http://www.engin.umich.edu/soc/omie/
Alpha Pi Mu (APM)
http://www.engin.umich.edu/soc/apm
Institute for Operations Research & the Management Sciences
http://www.engin.umich.edu/soc/informs

Double Senior Spotlight

by Kristin Banker and Xu Han

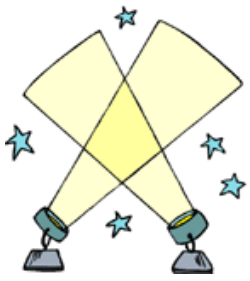
Name & Age: Lev Gartman, 21
Hometown: Rockaway, NJ
Plans after graduation: Internship with STOMP in NYC
Most memorable experience: Starting and developing GROOVE, a non-traditional percussion performance group (like STOMP) at U of M. It's been a great experience and the best thing I've ever done with my life.
Best learning experience: When I have problems I talk to my father because he's a very reasonable person and has excellent advice that I learn a lot from.
Funniest moment: I always get a big kick out of watching people's reactions right after they've tripped over their own feet and they do a little jump to keep themselves from falling down.
Advice for underclassmen: Relax; and if you wait till the last minute to get things done, you'll find you can be very efficient.
Favorite IOE class: IOE 422 - Entrepreneurship. I can understand how people can hate it; I'm just not one of those people.
Least favorite IOE class: I didn't care so much for the statistics classes, but recognize their importance. I also can't say I'm ever going to use a light meter again.
Work/Internship experience: Internship w/ Verizon Wireless IT Department in NJ 2 summers ago
Favorite bar in Ann Arbor: The Jug is awesome, especially before 11PM when it's nice outside and Long Islands are cheap.
Favorite restaurant/food in Ann Arbor: In and Out dollar pizza slices at 3 AM
Where do you see yourself in 20 years: In all honesty, I'm probably going to start a business because I like to sleep late.
Favorite music to listen to: Random stuff - Reel Big Fish & Ska, ACDC & Classic Rock, Drumline Cadences
Biggest pet peeve: Ridiculously attractive girls that smoke cigarettes.
Favorite TV channel: Cartoon Network

Name & Age: Stephanie Fidler, 21
Hometown: West Bloomfield, MI
Plans after graduation: don't cry yet, I'll be sticking around for a masters next year
Most memorable experience: Studying abroad (Valencia, Spain)
Best learning experience: Studying abroad (Valencia, Spain)
Advice for underclassmen: STUDY ABROAD
Favorite IOE class: 373, 474 (I'm in it right now, so we'll see) **Least favorite IOE class:** I'm going to cheat on this one...Civil and Environmental 260 (it's an Engin elective) DON'T TAKE IT
Work/Internship experience: I work at the Center for Gene Therapy creating standard work procedures, database design and maintenance, and website development. **Favorite bar in Ann Arbor:** Brown Jug



Where do you see yourself in 20 years: Having a family and professionally doing something challenging and revolutionary
Favorite music to listen to: Currently, it's the Garden State soundtrack, but I'm pretty open to most genres
Favorite restaurant/food in Ann Arbor: A long time favorite is Palio's
Biggest pet peeve: People who are unaware of the world around them.

Name: John Adams
Hometown: Chapel Hill, NC
Favorite IOE Class (and why): IOE 461...Pat Hammett is great source of information and conveys subject material in an understandable and interesting manner...I guess that's my favorite teacher…oh well.
Least Favorite IOE Class (and why): IOE 333/4, Bernaaard Martin and Paul Green…enough said
Favorite Drink: Weihenstephan, beer that's been around since before the Magna Carta (1040 AD) and that's no joke.
Best College Memory: Winter break sophomore year, walking out of Tampa Bays stadium and singing "Its great to be a Michigan wolverine" with a bunch of alumni after beating UFla in the Outback Bowl...first time I really felt proud and a part of the U.
Dream Job: I think I missed the bus on this one...playing on the PGA. Since that's not happening I'm just going to spend the next third of my life working so I can play golf when I'm retired.
What you'll be doing in 5 years: After 5 years of industry it will be a wonderful time to go back to school! This time at the Ross School of Business, to get a MBA.
Best thing about being an IOE: Actually having fun doing all this work with some amazing people...shoutouts to all the engi-nerds I've shared a laugh with while wanting to punch you at the same time cause it was 3am and I'd spent the last 10hrs working with you (and then sharing a pitcher once Thursday night rolled around).
Favorite IOE Moment: Pulling the GOAT April Fools joke on Miller, Josephine, Beauchamp, Ward etc…Honor Code huh?



Senior Spotlight, continued... Name and Age: Saurabh Goel ,20
Hometown: Bombay (India)
Plans after graduation: Hopefully get a good paying job which is also fun.
Favorite IOE class: IOE 310, I thought the class was really interesting, and Amy (the professor) made it a lot of fun.
Favorite restaurant/food in Ann Arbor: Shalimar
Advice for underclassmen: Ask questions, some else probably has the same question but is just afraid to ask.
Best learning experience: Doing EE and IOE to get a better understanding of how engineering is actually applied in industries.
Where do you see yourself in 20 years: Bombay, India Helping my country become a global business leader.
Least favorite IOE class: IOE 333 *Note: Saurabh is actually an EE senior waiting to get an IOE degree in a year (IOE senior too). He can serve to guide some of the engineering students in other disciplines seeking to get a joint degree in IOE. Also, the picture above is not really him.

Phone Interview Tips

by Michelle Lofgren

Dress to Impress. Wear what you would have worn to the interview.
Smile. Make sure to smile before answering the question. It will have a positive effect on the tone of your voice.
Be Prepared. It's ok to have cheat sheets but don't depend on them. Some things to definitely have near by: resume, list of past employers, and concluding questions.
Silence. It happens, so avoid awkwardness by letting the interviewer know that you need a moment to think about the question.
Breathe. In most cases it's a good idea to take deep breaths while stressed, but not in this case. Take them before the interview starts.
Practice. Ask a friend or family member to practice interviewing on the phone.
Distractions. Prevent interruptions by letting your roommates know in advance about the interview and post a sign on your door just in case. Also, if possible, turn off your call-waiting.
-**Water.** Have a glass of water nearby just in case.

EECS 270 (Introduction to Logic Design) Review

By Bridgette Kapets

I am currently taking EECS 270 as one of my non-IOE tech electives and so far it has been a good class. The instructors are all very knowledgeable and, for the most part, are able to explain the concepts well. This class is very different from IOE classes and is out-of-the-ordinary for my schedule, which is exciting.

There are two components of the class: a 1-hour lecture 3 days a week and a 3-hour lab once a week. The lab is an invaluable part of the class as we are given the chance to design circuits based on what has been taught in lecture. We decide out how to draw the schematic on the computer, run simulations on the circuits we designed, and finally implement the design onto a circuit board. This allows us to see exactly what happens when the logic explained in the book is actually put into practice.

A drawback of the course is the required time investment. Because this course is out of my regular realm, the concepts are new and not always intuitive so they take more time to fully comprehend.

In addition, labs can take a great deal of time since they are intentionally ambiguous at times and don't always run parallel to the lecture topics.

I've taken one midterm exam and I would say that it was a fair test of our classroom work: not easy, but not too difficult either. It was a good gauge of what has been taught to this point and it was relatively close to the practice problems provided as far as difficulty level is concerned. The instructors might have done a clearer job in telling us what to expect, however, the class being out of my area of study may have contributed to its not being crystal-clear to me. Overall, I would say that this is a course that is challenging, useful, and not impossible, especially if you enjoyed Engin 101. It is a course well worth putting on your schedule!

IOE 425 Review (Manufacturing Strategies)

By Amy Jackson

IOE 425 is a two credit course covering the several concepts behind Lean Manufacturing. The class begins with an introduction to what lean manufacturing is and the history of its development by Toyota. Throughout the course you will cover the concepts of Heijunka, Just-In-Time Manufacturing, Kaizen, and Jidoka. All of these concepts are beginning to be common terms in industry today and an understanding of them will be beneficial in future internships or full-time positions. In this class you will also cover the importance of standardized work and learn the process of value stream mapping. You will learn to identify waste in a value stream and also the ways to reduce it to increase your overall profit.

Overall, I thought this was a very beneficial class. I have been asked in several interviews to explain the concept of lean manufacturing and after this class have felt very confident in discussing it. The class, being 2 hours twice a week, can drag a bit at times, but the information is still valuable and is usually presented in a creative and practical way.

The professor continually uses real world experiences, or even fellow students experiences, to explain certain ideas associated with lean. This makes the material very easy to understand and recall.

Logistically, the class consists of online homework due before every class, two exams, and two group projects. The homework is not very difficult, just a review of the reading you are supposed to have done before class. The one negative aspect of this class is that the first four weeks do not require much work, but both exams and both projects are due in the last 3 weeks of class. This makes for a very busy few weeks which you must prepare for when deciding when to take the class. With that in mind, I think this class covers valuable material and the workload is more than appropriate for a two credit class.

IOE 432 Review (Industrial Engineering Instrumentation Methods)

By Douglass Mosley

Most students come to the University of Michigan with the expectation that they will learn skills to assist them within their chosen careers. As Industrial and Operations Engineering students, most of the classes we take are heavily geared towards concepts and the hands-on applications are very limited. Classes where a student can gain tangible experience can prove to be very beneficial when trying to obtain a job. That is why I strongly recommend fellow IOE students enroll in IOE 432: Industrial Engineering and Instrumentation Methods.

This is a three credit lab class that was initially only offered during the spring semester but now is also offered during the fall semester. The class has a two-hour lab and a two-hour lecture once per week. Throughout the semester there are a total of eleven labs which will be completed. They range from topics on electrical circuits to experiments on sound and magnetic fields. Each week students are exposed to new and innovative technological devices, many which are used in industry today. The instructor also does not structure his class to have "cook-book" style labs. They are very open-ended and allow for experimentation, leading to better learning. Another benefit of this class is that your grade is based solely on attendance and lab reports, thus taking the grade-hungry attitude away from the class and producing an environment where learning is the emphasis and not grading. Grades certainly are not given away in IOE 432 but, with strong class participation and high quality lab reports, students usually will end up with a grade that they find satisfactory.

Abstract concepts within Industrial and Operations Engineering are extremely important because you must possess the knowledge in order to be able to perform a task sufficiently but, after my internship experiences, engineers are not truly respected in industry until they are able to show how a tool or instrument works. Taking this course will put students at the head of the class when it comes to using various devices and instruments prevalent within industry.

Psychology/Sociology 122 Review (Intergroup Dialogues)

By Robin Rosenbloom

I know how important it is to balance out a hard engineering course load with the occasional fun and easy class. However, it seems that every time I try to take a less time-intensive class, the professor changes the syllabus, and I find myself working harder then expected.

Currently, I am taking an extremely interesting LS&A class. Psychology 122/Sociology 122 (Intergroup Dialogues) is a 2-credit course that explores social group identity, conflict, community, and social justice. The class is small; there are only sixteen students, with varying backgrounds, led by two trained student facilitators who encourage dialogue rather than debate. We meet once a week for two hours to discuss and examine reading materials that address issues and experiences relevant to the groups in the class, in relation to both the University setting and general society.

In the past, different dialogue sections have included: "Women and Men; People of Color and White People; Lesbians, Gay Men, Bisexuals and Heterosexuals; Exploring Socioeconomic Class; Native Americans and Other U.S. Citizens; International Students and U.S. Students; Women of Color and White Women; Blacks and Jews; Asian Women and Asian Men."

I am in the "Women and Men" section, and feel that my experience as a woman in engineering has enabled me to share unique experiences with my group members. Every week students are asked to push their comfort zones and to tell personal stories or share thoughts and feelings.

Not only is the workload light, but Intergroup Dialogue is also a refreshing change from engineering courses. I have learned about different cultures and ethnicities, and gained a better understanding of myself. I highly encourage other students to take this class and I actually plan on taking it again in the future.

~ check out the course website: http://www.umich.edu/~igrc/dialogues.html

IOE 316 Review (Intro to Markov Processes)

By Jacob Rassner

Starting the second semester of my sophomore year I had been disappointed with the instruction at this university. Going through the LS&A intro classes in physics, calculus, and economics, and the introduction engineering classes, I had not had the outstanding professors that one would expect to have at a top college. Don't get me wrong; I had a couple of very good teachers that got the job done, but none that really stood out. Either the professors did nothing but read off of their PowerPoint slides or directly out of the textbook, or it was impossible to understand what the professor was trying to say.

It was halfway thought this semester I finished up with IOE 366 and was getting ready to start IOE 316. I was not very excited about the class, figuring that it was going to be another class with lackluster instruction. However, my opinion was quickly changed and I was very pleasantly surprised. The class was being taught by the duo of Professor Mark Lewis and the GSI Damon Williams.

This class did not have a good place in my schedule. I had it at 9:00 am and it was the first of three straight one-and-a-half hour classes all being held in IOE 1610. Throughout IOE 366, which I had at the same time the first half of the semester, I had trouble staying awake and paying attention, as I had with any other class that early. But somehow through out all of IOE 316 Professor Lewis was able to keep my attention and keep my eyes from drooping even the slightest bit.

Mark Lewis is an outstanding professor that cares about the student, really knows the material, and can really teach. Lewis really knows how to make sure the students understand the concepts. He also knows how to break up a class and make it feel shorter than it is. Throughout class he interjects personal anecdotes and personal movie reviews to keep everyone's attention.

Professor Lewis alone would have been enough to make the class a great class. But we were also lucky enough to have Damon Williams as our GSI. He was a perfect complement to Lewis. Most people who are as intelligent as Damon are not good at teaching and cannot explain anything. However, Damon is an exception to that rule. His explanations in discussion and office hours were perfect follow-ups to Lewis's lectures. He was able to clear up any questions with ease. Not only is Damon extremely bright and an excellent teacher, he has a great sense of humor too. He let his sense of humor seep into his teaching, making is much more enjoyable. If engineering doesn't work out for him, although I have no doubt it will, he could easily pursue a career in stand-up comedy.

Dueling Advice Columns

Helping Friendly Guy

vs.

Justin Time

Dear Helping Friendly Guy,
I get really stressed out over grades and classes. It happens all the time, especially when I take an exam and I don't even know how to approach half the questions. What can I do?
-Thinking Too Much

Dear Thinking,
People have all different kinds of reasons for going to class, but most tend to focus around stuff like "I want a job when I graduate" or "my parents won't pay for tuition if I get below a 3.0." Lots of students want a high GPA to get academic recognition or to get into a nice grad school. However, you should definitely try to figure out your own reason why that miniscule number is so important. It just might get you to consider placing your worries on something else.

There are a million things to do on campus besides studying and you just might find some of them more rewarding than a letter on a piece of paper. Remember high school? Few people here really cared about that GPA. In four or five more years, no one is going to be harping over your college GPA – you might as well start the apathy now, while you're young and it's in style.

Dear Helping Friendly Guy,
Everyone's already looking for summer internships! What happens if I don't get one? What should I do?
-A Hopeful Intern

Dear Hopeful,
While internships might be the popular thing to go after, there's definitely more out there. If you're looking to actually make money, an internship might not be the best way to go. Working 40 hours a week back home for four months can really give you a day-to-day feeling of contributing to your community, not to mention your wallet. For those who're looking for something academically stimulating, there's always independent research or working with a professor over the summer. While it might turn out to be mundane office work, you'll at least be in close contact with cutting edge thinkers (moreover, get in good with your professors). The downside is that you probably won't get paid too much, if at all, doing research. Lastly, if you'll still be "learning mode" once summer comes around, you could always take classes and get that humanities/social science series out of the way.

Seeing that variety is the spice of life, many students recommend mixing up these things year-to-year. The important thing to realize is that you don't *need* to have an internship to have a productive summer.

Dear Justin,
I am a freshman in the College of Engineering and I am considering becoming an IOE major, but I heard it is really difficult. What should I do?
-Ed Turner

Dear Ed,
IOE does rank among the most difficult engineering majors at Michigan. However, here are two tips to "water down" your degree. Consider taking physics courses and labs at a school near home over the summer. Also, think about taking your third non-IOE engineering core course (the one that is not MSE 220 or NERS 211) at a nearby community college. Employers are always especially impressed by Michigan Engineering students who can pass community college courses.

Dear Justin,
I am trying to meet some IOE students to hang out with on the weekend. Where should I sit in class?
-Des Paratte

Dear Des,
Great question. IOE's are fun people. I think it is time someone told you about the "back-left" rule. Next time you are in 1610 IOE for class, sit in the back section, left side. These people are generally much more talkative than the rest of the class. They are also known to frequent some of the best Ann Arbor hotspots.

Dear Justin,
I have a case study due next week and have been working on it at the Duderstadt Center. I never see anyone else from my class. Where do they study?
-Lee King

Dear Lee,
If you want to go over concepts on assignments with other IOE students you are making two mistakes: location and timing. Try relocating to the second floor of the undergraduate library on central campus the day before the assignment is due. That generally works out best.

***
Have questions? Drop them in the Alpha Pi Mu mailbox in the IOE mailroom!

Special Bonus:
Beloved College Recipes!

Whip out your crock pots and toaster ovens...it's time to get cooking, Bleuprint style. Make these delicious and delightful dishes for a professor, friend, roommate, date, or organize a potluck for everyone in the IOE Commons.

Beyond Basic Ramen

Pad Thai in a Hurry

Serves 2

Sauce:

- 2 tablespoons vegetable oil
- ¼ cup sugar
- 1 tablespoon white vinegar
- 1 tablespoon soy sauce
- 2 teaspoons crushed red pepper

Ramen:

- 2 packages ramen
- 1 tablespoon peanut oil
- 2 cloves garlic, minced
- ¼ cup sesame seeds

Garnish (optional):

- 2 tablespoons chopped chives
- 2 tablespoons chopped peanuts

Mix together the sauce ingredients in a small bowl and set aside. Prepare the ramen according to the package directions, discarding the ramen seasoning packets. Drain the ramen and set aside in a covered dish to keep warm. Heat the peanut oil in a large skillet over medium heat. Add the garlic and sesame seeds and sauté for about 1 minute, or until the seeds are golden brown. Reduce the heat to medium-low; add the sauce mixture and heat for about 1 minute. Add ramen and toss until well-combined. Remove from heat. Sprinkle with the green onions and peanuts, if using, and serve immediately.

Italian Ramen

Serves 1

- 1 package ramen
- 2 tablespoons olive oil
- 3 tablespoons Parmesan cheese
- 2 cloves garlic, sliced
- Your favorite herbs (oregano, basil, or sage)

Discard the ramen seasoning packet. Prepare the ramen according to the package directions. Drain the ramen and add the olive oil, Parmesan, garlic, and herbs. Stir well. Add additional Parmesan if desired. Serve with tossed green salad or sliced tomatoes.

Recipes from:
Puente, Debbie. Your Shirt Is Not an Oven Mitt! New York: St. Martin's Griffin, 2004.

Beloved College Recipes! *cont.*

Ingredients

- 1 cup of strong black coffee
- 2 tablespoons of brandy
- 1 packet of savoiardi (ladyfinger biscuits)
- 3½ oz of milk chocolate
- 2 eggs, separated
- ½ cup of powdered sugar
- 10 oz of mascarpone - this can be bought from a delicatessen, or made using the recipe below.
- 1/8 teaspoon of cream of tartar

Mascarpone

In a medium saucepan, scald (heat until almost boiling) 10 oz of cream. Remove from the heat and stand for 1½ minutes. Add the cream of tartar and mix thoroughly. Cool the mixture and refrigerate for at least 12 hours. Before using, beat with an electric mixer until the mixture is very thick. Makes 10 oz.

Tiramisù (Serves 6)

In 6 individual dishes or one large dish place half the packet of savoiardi in a single snug fitting layer - break up the biscuits if necessary. Mix together the coffee and brandy and pour half of the mixture over the savoiardi. Grate the milk chocolate. In a medium sized bowl beat together the mascarpone, powdered sugar, and egg yolks until the mixture thickens. Beat the egg whites in a separate bowl until they form stiff peaks, then fold the egg whites and half the chocolate into the mascarpone mixture. Spoon half the mixture over the first layer of savoiardi. With the remaining savoiardi build a second layer, and pour over the last of the coffee. Spread the remaining mascarpone mixture over the top. To garnish, sprinkle with the remaining chocolate. Cover and refrigerate for several hours. This dish is best left overnight to let the flavours develop.

Julie Van Helden
Haute Collegiate Chef

Alrighty folks, this is my time to shine. I once told my parents that I wanted to become a chef and they said, "Go get a real degree first." Despite this harsh response, I still have faith in my culinary skills, and I'll share a couple of my favorite recipes with you below. Bon appetite!

Mmm Mmm Good Guacamole

- 2 ripe avocados
- 1 lime
- 1 medium sized tomato (not too soft)
- 1/8 cup cilantro
- 1 small red onion
- 2 cloves garlic
- Salt, pepper, and hot sauce to taste
- 1 pack of breath mints for after

Cut the avocados in half around the pit (lengthwise). Use a spoon to remove the flesh into a large mixing bowl. With a knife, cut the avocadoes into smaller chunks. Now use the back of a fork to mash the avocados until there are almost no lumps.

Mince the tomato, red onion, garlic, and cilantro and add to bowl. Now cut the lime in half and squeeze the juice into the bowl (watch out for the seeds!). Add a couple pinches of salt and pepper, and if you like…you can experiment with some hot sauce. Mix it all together until well incorporated.

Serve immediately with tortilla chips or else avocados will oxidize and turn brown.

Upside-Down Portabella Caps

- 4 portabella caps
- 1 red pepper
- 1/2 cup arugula/roquette leaves
- 1 clove garlic
- 1/4 lb fresh mozzarella
- 1 Tbsp balsamic vinegar
- 2 Tbsp olive oil
- Salt and pepper to taste

Pre-heat oven to 400F.

Optional: using a spoon, gently scrape against the underside of the mushroom to remove the gills. Brush off any dirt from portabella caps but do not wash with water. Place gill-side up on a baking sheet covered with aluminum foil. Sprinkle each mushroom with a couple drops of olive oil and balsamic vinegar. Season with salt and pepper.

Wash the red pepper and arugula. Cut the pepper into thin, lengthwise slices (~1/4 inch thick). Cut the mozzarella into thin slices. Mince garlic very finely. Spread a pinch of garlic on each portabella. Then, place 4 leaves of arugula on each mushroom cap. Next, put 4 slices of red pepper on top of the arugula. Top with 1-2 mozzarella slices so that mushroom is entirely covered. Drizzle the remaining olive oil on each portabella cap.

Bake for 20 minutes in the center of the oven.

Blueprint Editors-In-Chief:
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Special Thanks to the Following Members of the Blueprint Committee:
Cheng Cheng Ip, Franklin Jen, and Jevon Reynolds

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 jangstro@umich.edu or rrindler@umich.edu