

Meeting Start: 08:00

Dr. Vladimir Alvarado: Molly is our new Office Associate, senior and she is joining us today.

Molly DeLau: She is from Golden, Colorado, she received her undergraduate degree from the University of Wyoming in music performance. She loves Laramie and UW, she's very happy to be here.

Dr. Alvarado: He wants to introduce Mike, and welcome him. Jessica and Mike graduated together, and now they work at the same company.

Michael Basden: He graduated from the University of Wyoming in 2010, then went to UT Austin to get his PhD in Chemical Engineering. Upon graduation, he joined Shell in the projects and technology tracking research development group where he did simulation work developing new hardware for Shell's (catalytic crackers). Last September, he became a control systems engineer at Shell's Deer Park refinery.

Alvarado: We came about Mike's name to be a potential member of the Advisory Board. Patrick Johnson suggested it. He contacted Mike and shared his resume with everybody.

Marjorie Bedessem: Administratively, we need to go forth and approve him as far as joining the Advisory Board.

Dr. Alvarado: Does everyone know John Tatarko? He will introduce himself.

Dr. John Tatarko: John Tatarko, from Cleveland Ohio, he was brought to UW to move forward our new Process Control and Instrumentation minor. He has previously taught at the University of Louisville and the University of Missouri. He's excited to be here, we have a good start and we're going to talk about where we're going and what we plan to do in the future. He will talk for about ten minutes, some students from his initial class (Fundamentals of Process Control) will give a presentation of the design of our two new laboratories.

Dr. Alvarado: He will share the agenda online for everybody.

Marjorie Bedessem: We are moving forward with approving the agenda. We will address Michael Basden and the board administrative business at 11:30am. Are there any other changes to the agenda, as shown on the screen?

Dr. Alvarado: At 11:45am we have scheduled a time for feedback and wrap-up, but we can move it depending on how the rest of the meeting goes. We will leave room for adjustment.

Marjorie Bedessem:

- Dr. Alvarado did a great job, as far as editing and providing a pre-read so we can accomplish this in a reasonable time period. She has been on an eight hour virtual meeting and it is really not pleasant, hopefully we can stay engaged for four hours, thank you for condensing the agenda for the meeting.
- Dr. Alvarado will move forward with the department update.
- Voting on the agenda: All in favor of moving forward with the agenda with the specified changes, say I.
 - All say I. None opposed.

- Do we normally approve minutes? The recording is good as a backup. The minutes for the last meeting were rather lengthy but recorded well and complete. She would like to get a motion to approve the minutes for the fall meeting. Marge: I move to approve. Mary Shafer-Malicky: Second. All in favor: All say I. Opposed: None. Motion passes.

Dr. Alvarado Department Update:

- He will not focus on fundraising opportunities right now, we will have Craig Russow talk to us about what he proposes for fundraising.
- There are discussions about Shell contributions to us.
- Some news, we moved to online teaching on March 30th. With an extended spring break for students (2 weeks) we used the last week of the break for faculty to prepare their online teaching. We had meetings as a department to help each other out with the different ways of doing this.
- Some students had to go home to their parents' house. The dorms were vacated, but also some students couldn't leave town.
- We have the 5G network available now, but some students don't even have a 3G network. They don't have the bandwidth for synchronous communication.
- The faculty moved to a mode using Notability on an iPad or software on other platforms. They tied their notes to the lectures to give the students a more manageable pace, as they convert these lessons into videos.
- Many faculty on campus have moved their lecture time to their office hours (online). Some students started asking for that interaction and feedback from faculty.
- Examinations have moved to a somewhat lighter mode. It was particularly challenging for the Unit Operations Lab but Judd Larson and Kaspars Krutkramelis moved to recording experiences in the lab and sharing them with students.
- Those who know Dean Wright, the interim Dean, Dr. Alvarado was on the committee to find a new dean, but with changes in the economy, the search has been suspended indefinitely.
- Dean Wright will probably stay into next year. Professor Michael Pishko, our former Dean is on sabbatical leave this semester. He left for medical reasons.
- Dr. Saman Aryana is on his last year of the tenure clock so he has requested his tenure and promotion.
- Dr. Aryana will move from assistant professor to associate professor started July 1st, assuming everything is approved.
- Professor Joseph Holles has requested his promotion to full professor, also starting July 1st.
- For these two faculty members, we should hear from Academic Affairs. We would have heard from them by now, but everything has been delayed by about a month.

Mary Shafer-Malicky: She has a question about the state search. Is it his expectation that this will be taken up by the direction of the new university president?

Dr. Alvarado: In part, but the governor and agencies of the state need to figure out ways of cutting back on funds. We are mandated to put budgets on hold that are above \$100,000. We have put the search

for interim president on hold as well as searches for several college deans. It is a good opportunity for new incoming president to have a say.

Mary: When does the incoming president start? July?

Dr. Alvarado:

- Yes, he starts July 1st, that is the start of our biennium.
- For the roster right now, Professor Karen Wawrousek will request her tenure next year.
- Dr. Aryana will move to an associate professor, provided everything gets through and approved.
- Dr. Holles, provided everything goes well, will also move and we will be heavy on the professor side of things, with one assistant professor left, and three associate professors.
- Dr. Tatarko, who is a professor of practice, which is a renewable position every year, and he should be here next year.
- Dr. Michael Pishko, former dean, is supposed to be back late summer. Dr. Pishko will need to have a conversation with Dean Wright because he will need to be assigned some teaching and some activities.
 - Dr. Alvarado signed his job description while he was still Dean, he could not assign much because part of his tasks were to assist the interim Dean. It was to work on the Biomedical Engineering minor, he doesn't know much about the progress.
- At the Deans office, we have the CEAS staff, we lost someone who was partly managing that office and we lost the marketing person, they just hired someone recently for marketing.
- The Foundation is still in transition, someone just gave birth this month. Craig Russo is back helping with the Foundation and he says we have an excellent composition of the Advisory Board.
- Also, Molly, we are very happy to have her here, she has jumped on the remote/electronic side of things with no problem.
- There are too many changes in the way we manage the department so the only real change is the new Process Control Coordinator which used to be Dr. Dave Bagley, now it is Dr. Tatarko (JT).

Enrollment:

- Molly collected data recently to answer any questions that may arise. From the data in 2014, there is an obvious drop in enrollment but it's not scary yet. There is a problem in a lot of programs with the drop in Chemical Engineering.
- He anticipates issues with enrollment because of the economy, but there may be a boost in enrollment for the graduate program.
- Some people may lose their jobs, so we may likely receive more applicants. There may be a lot in petroleum engineering, maybe not as many in chemical. These numbers may fluctuate, because of the way they are distributed.

Mary: You said the number of graduate student applications will go up, it is unfortunate that it has to be so dependent on economic conditions, when economic conditions are poor, the graduate enrollment is good. What are your thoughts with respect to the undergraduate enrollment? Are there prospects going up for that as well?

Dr. Alvarado:

- Things have changed because of COVID-19. His thoughts on that are as good as any statistic on COVID-19. He thinks there is going to be a dip and then a big period of recovery.
- He tried to spend some time on recruitment efforts, looking at data, he doesn't think recruitment via road trips without a specific target is a good idea.
- We thought it would be good to have a more standardized program within chemical engineering with interesting minors, to see which students are interested and then target other students from those places.
- We would give those potential students an opportunity to see facilities, learn about the program and tuition fees.
- He would like to see 190-200 in enrollment numbers, very sustainable.
- The previous president wanted a significant increase in enrollment, it happened some places, but not UW, and we actually lost a few students. Some moved to other programs, not everyone is prepared to pursue chemical engineering.

Dr. David Bagley:

- Unfortunately, all universities are experiencing high school graduate rates dropping, a fairly steady decline.
- This has affected the generation born right around 9/11/2001 and the years after.
- Several states are projecting increases or steady high school graduate rates, Colorado and Texas being two.
- Other universities are scrambling because they know that the applicant pool is shrinking.
- In part due to COVID, the fraction of high school seniors who say they are going on to college is plummeting. 75% last year, closer to 50% this year.
- These are not hard numbers but we think most universities are going to be struggling and the demand for out of state students will go up.
- There are associations of people in admissions offices, a professional society that they all belong to. Last May they added language to documents produced to relax the poaching constraints that used to be used.
- It used to be you could not contact high school students after May 1st because that was the deadline for them to make a decision on where they were going to go. A lot of universities are saying that they are going to consider trying to recruit students into the summer who have already accepted offers from other universities.
- I could get ugly, the economy used to be better when starting the application process for fall 2020. Three things are happening: 1) the decrease in number of graduates 2) students are less likely to go to university because of the uncertainty of the virus 3) many non-residents will simply stay home because they will feel safe and secure.

Mary: We have seen a proportional decrease in admitted students or students starting out in general at the university. Are we seeing a decrease overall?

Dr. Alvarado:

- In some programs, yes, we didn't meet the targets, in Wyoming we are really tapped out.

- We want to focus on minors so students can get a feel for the flavors of chemical engineering.
- We are going to work hard on the website to update it. We requested some funding that is going to help the recruitment aspect of our website.
- We will do promotion to appeal to potential students.

John Tatarko's Presentation (Process Control and Instrumentation Minor):

- We've had an auspicious start to the minor, we've been allocated two very nice lab spaces on the third floor that we will use for laboratories and instruction.
- The library has put together a website specifically for our minor, where students can access textbooks, journals and information directly related to Process Control and Instrumentation.
- In fall 2020 we will start the process control colloquium, in hope to get speakers from across the nation who are pioneers and leaders in the PCI field.
- He has already chosen two speakers, one from UW Electrical Engineering, Professor John O'Brien, and a man from Genesis Alkaline, who graciously donated money to help kick start the minor.
- Tom Barker from Genesis will also be one of the new speakers. We hope to record these speeches/lectures and have them promoted online by either a blog or YouTube channel.
- Dr. Alvarado and Dr. Bagley looked for software that would be useful for students to understand simulation.
 - There's an instruction in Aspen, but the simulation software for Aspen Dynamics has a very steep learning curve that can be frustrating to maneuver.
 - We have looked for software that would be more user friendly, and is fairly inexpensive, from a company called PI Controls. It is student friendly, with a low, easy learning curve.
 - Aspen has its places for teaching students, but it does take a lot of time to learn.
- Two of his students will present on the design of the two labs. The laboratory equipment came last week in rooms EN3024, EN3026.
- Initially, he was concerned about the price we paid for the laboratories, but seeing them now, they are solid, rugged pieces of equipment, each unit weighs over 300lbs.
- Looking at the pictures of the laboratory, it appears to be flimsy tabletop setup, when really it is not.
- This equipment is from US Didactic, which is the American arm of G.U.N.T., in Germany.
- He is looking forward to selling these things and commissioning them (one of the tasks of some of the students will pursue in the fall).
- We will be teaching the CHE4090, which is the traditional Process Dynamics and Control course that teaches cross transforms, PIP controls and cascade controls.
- CHE3090 is a simulation course, where we use the new software. In this course he will also introduce the students to PLC programming.
- The curriculum upgrade shows the core of the Process Control and Instrumentation minor.
 - First course: Fundamentals of Process Control, introducing the students to the reading of PNID diagrams, control elements that include control valves, motors, gates, etc. and introduce them to some boolean algebra to prepare them for learning a PLC program.
 - Last course: CHE4092, Control System Design, the plant design of a control system. We're looking to upgrade the controls on our Unit Operations Laboratory. Some of our corporate sponsors have said they would be amenable to donating some equipment to

help facilitate the design of some control systems for our Unit Operations Lab. That would be another topic for CHE4092.

- He has been surprised about the lack of training the students are getting in the engineering physics sequence: Physics I and Physics 2.
- They do not have a good enough background in statics and electrical engineering concepts.
- He is not trying to disparage any professors in that department, he just doesn't think the curriculum gives the students a good enough background in electrical engineering concepts, to move faster in the process control topics.
- For example, most students had never seen or heard of how to calculate a circuit equivalent. When trying to teach single conditioning in CHE 2090, he had to almost start from scratch in some basic electrical engineering concepts.
 - The makeup of the class was 18 students, 16 CHE, one Petroleum and one Electrical. He would like to see more people from petroleum, electrical and mechanical engineering involved in this minor, so we need to promote this minor throughout multiple engineering departments.
- He envisions to make Process Control & Instrumentation more than just a minor, perhaps have a program for people all over the U.S. who want to learn more about process control and instrumentation that would be strictly done online.
 - To receive the certificate, you would have to come to campus for a week or two to do the laboratory and simulation exercises.
 - The next step of the progression would be a full Master's degree in the process control field. There are very few universities in the U.S. that have something like this.
 - He is from Cleveland, Ohio, where Case Western Reserve has a program for a Master's degree, but it's geared more towards systems engineering than control.
 - This minor has been promoted by the industry in this area, because they can't find control engineers.
 - The University of Houston has a certificate in this minor, so do community colleges. We are going into a myriad where we will be able to add students either through a certificate program online or through a Master's degree, both good options.

Pictures of PC&I Laboratories:

- There's the calibration stand, which is on wheels so we can move it around.
- There is a fully instrumented, continuous stirred tank reactor with a PID controller.
- There is a full CSTR we can use for the process controls lab and also for the Unit Operations Lab.
- Those three pieces of equipment that we bought from Didactic, alone cost \$100,000.
- The CSTR system comes from VI Microsystems LTD, the entire system is \$8,900. The chance to upgrade both our Unit Operations Lab and our Process Control Laboratory will be debatable in the next few years because of the inevitable budget cuts within the entire university.
- There is a distillation column. We are fortunate to have something like this, many universities are discarding their columns and going to benchtop systems.
 - This column has almost no instrumentation or control on whatsoever. We would like to retool this column by adding a system of controls. The basic minimum distillation column is usually 5-12 controls, he's shown them in a drawing.

- For Craig Russo, and the members of the IAB in the DropBox, are plans to upgrade the heat changer experiment, the stir tank experiment, and the dissolved oxygen and absorption experiment.
- For this distillation column, we need some engineering expertise. Right now, it does not have a reflux or a reflux accumulator at all. Michael sounds like he would be good for something like this because he has worked on columns and he works for Shell.

Michael Basden: He is interested in terms of trying to design the rescale for the equipment. If nothing else, JT could also reach out to the University of Texas, Austin, where they have the separations research program, for the process science and technology consortium, the program he graduated from. They would have expertise to help out, they own their own private plants on a larger scale.

John Tatarko (JT): He knows what he would like to do, this is for experienced professionals in distillation to help with the reengineering of this system. Any questions?

Tom Findlow: Is the modeling system you are using, or is there an actual modeling program called PI?

JT: It's a modeling program called PI controls.

Dr. Alvarado: He has been working with Megan on putting budgets into place. We have an opportunity to use some of the program fees in the college, possibly some Tier I money, and some of our own (CHE) money. Now he can add the cost of the software and he thinks we can cover most everything through 2021, it looks promising.

JT: Abbie and Cole (JT's students) will present about the labs.

- There are several PowerPoints and 3D renderings of Laboratory 3026. This lab will be the instructional lab used for all courses in the CHE Process Control minor, or for any other CHE courses.
- It will be a full classroom with computers and dual monitors, with two large walls for white boards. It's an ideal room for instruction. Laboratory 3024, will serve as the actual laboratory.
- Both of these students have taken the time to design the labs and actually take some laboratory experiments.
- He passed them out to three different project managers, who completely parsed out the experiments, so anybody who reads the PowerPoints will know exactly how to use the equipment, without having to go through the laboratory manual.
- They did most of this work on their own, under difficult circumstances. These students are scattered all over the state and they don't have access to the building.
- The lab itself is really well equipped, with a full supply of gases, safety showers, fume hoods and benches.
- You can see that Abigail Mitchell, the project manager for this, has located the laboratories on the bench on the right side and the calibration unit, on rollers, up against the wall. This is an ideal lab for us, and there is also room for additional equipment.

Dr. Alvarado: There are two faculty members who have requested sabbatical leave, and they were approved. Dr. Katie Li-Oakey and Dr. John Oakey. Because they are leaving, the department will get back some of their salary. He proposed to the Dean's office to use these funds to hire one of our

instructors in the Unit Operations Lab, Judd Larson, who also happens to be Dave Bagley's PhD student. Judd Larson will be finishing up his degree this summer.

Dr. Alvarado:

- We are trying to hire Judd full time as an instructor, at least for a year.
- His job would not be limited to teaching, part of his time will be dedicated to managing and upgrading that lab. This is a good conjunction of interests to put together for the coming year.
- If nothing changes in regard to the sabbatical leaves, it would be great to have more time from Judd Larson for him to teach and work in the Unit Operations Lab.
- It would be ideal to find some funding for him to continue and stay as an instructor. That would solve a lot of problems in regard to not having an engineer working in the teaching labs. Maybe JT and Judd can work together through these upgrades?

JT: His students are getting ready to logon. Welcome Abigail.

Abigail: Process Control and Instrumentation Laboratories:

- There are three units that we'll have, a level control, a demonstration unit, level and a temperature and flow demonstration unit.
- The flow and temperature control unit are both SWAN models, they both weigh about 300 pounds, someone will have to move that.
- The unit before that is a moveable unit, we can place it anywhere, and it is very easy to access.
- All units combined can give us about 10-11 different experiments that we can use in labs, that will help prepare us for future engineering situations later in life.

Safety Aspects:

- Safety attire such as safety glasses and hard hats will be used to better encapsulate what it would be like in real life.
- There are some hazards, a lot of them have to do with electrical issues, so we will make sure everyone in the lab is wearing proper attire and is aware of what to do in the case of an emergency.

Dr. Dave Bagley: He likes how she has gone through a whole bunch of different experiments that can be done in this lab. Could she share a couple of those experiments? How would you go about doing the experiments?

Abigail: She says they haven't been able to use any of the equipment due to lack of access to the building because of COVID-19.

Korby: If there's nothing we can do from a health and safety standpoint to provide the university forms to help the students identify potential hazards in the lab, he would be happy to allow Dr. Alvarado to incorporate and brand it however he likes, to help with those assessments. If he shares this information, we can share it with students.

JT: The other student, Cole is online now, he'll discuss the other lab room.

Cole Thomas:

- He is a current junior, living in Yellowstone right now, majoring in Electrical Engineering, with a minor in Process Control and Instrumentation. He is very excited to have this opportunity, as he wants to work in automations and controls in the future.
- It's been difficult considering the circumstances, but the structural lab will provide more hands on learning experiences, especially with technical programming, something that's very key to the industry.
- In the original state of the room, everything a mess, renovations that are currently happening would remove extra furniture and incorporate 25 computer work spaces for everyone in the class. The important thing is to get a library that includes coursework so students have access to that additional knowledge. He says they do have a rough draft of what the room will look like. There will be more added eventually, but they are waiting because of COVID delays.
- An exciting part is the software they will be getting.

Software:

- Pi Cromaster, a training software that's used both in industry and for students. It uses an integrative from Pi-Top to do simulation based labs.
- Pi-Tops is a software done by the same company, Pi Control Solutions, used in industry and is capable of doing a lot of things revolving around controls.
- They are going to proceed with the procurement of furniture and supplies to get the lab set up.
- Once fall 2020 comes around, they are looking into adopting what UW's IT department academic and student lab policy, which is general policy so the room is used more professionally, i.e. academic use only and no food or drink allowed.
- They are also seeing if they can get access to use the lab outside of lab time.

JT: Thank you Cole and Abigail. He is so proud of the students in his class, they have done this work on their own, given their time constraints and regular coursework. In CHE4090, they will be doing the commissioning of this equipment too.

Break

Dean Wright's Presentation:

- We have been planning to do a transition, amidst COVID, we have hit many obstacles as all of our procedures have been changed.
- We are also having budget issues, i.e. hire freezes, etc. It is not a great time to add a new department head. He spoke with Dr. Alvarado, who has agreed to stay on as department head for another year.

Marjorie Bedessem:

- It's a tough time for everybody, state budgets, business, she is glad to hear Dr. Alvarado will be staying on.

- Any kind of continuity we can maintain throughout this time period would be appreciated by faculty and students.
- Hopefully we can give Dr. Alvarado some relief in another year. Hopefully in the fall we can have an in person IAB meeting.

Dean Wright: He thinks it's not a great idea to "change captains" in the middle of a hurricane.

Mary: She appreciates the fact that Dr. Alvarado is going to stay on during this time. She agrees with Dean Wright, that it is best to keep the same department head through all this.

Dr. Alvarado: Thank you all, we have an Advisory Board that we should be proud of. The IAB has been an enormous asset to us, so thank you.

Dean Wright: Are there any questions for him?

Mary: In regard to the postponing of the dean search, can you give us your feedback on your expectations and what you see from the advisory board?

Dean Wright: He thinks advisory boards are an important link to the outside, universities can tend to lose touch with reality. Two things that help us are advisory boards and professors of practice who do things in a more practical and realistic way. The advisory board does a tremendous job at keeping us pointed in the right direction.

Mary: We want to know we're preparing graduates to help our businesses and industry and keep job opportunities available to the graduates.

Dean Wright: He has no idea what's happening with the dean search. He received a message from Kate Miller, that said, 'are you okay continuing to do this?' referring to maintaining the position as interim dean. He said yes, so they suspended the search for a more permanent dean. He's worried about Arts & Sciences and the Haub School because they were really close to picking somebody.

Mary: If you wait another year to hire someone, those candidates may not be available then.

JT: With the budget up in the air right now, how do you see that affecting the equipment purchases that are set up for the next year or two?

Dean Wright:

- It's a strange situation right now because they're preparing us for these cuts, as if we are going to have to get along with less in the budget, and there are last minute high priority emails that include large amounts of money that are needing to be spent.
- If possible, we will have some of the federal coronavirus relief money, that may help us with equipment, but the regular budget will definitely be lower.

JT: Dr. Alvarado and Megan Barber have been working on a package of some things he has proposed. He's hoping to get this approved while the money is still there, it should be possible.

Dr. Katie Li-Oakey: Have you heard any discussion about furlough? She saw an exchange amongst the faculty list.

Dean Wright: Some schools are doing that, we look at Boise State, similar to UW. They're furloughing some people, but their budget situation is a little different than ours. We have better reserves, the financial people at UW have been putting money in reserves for a while. They say we're in better shape than schools like Boise State.

Dr. Katie Li-Oakey: Even if we just keep the best, they are not furloughing for the nine month faculty salary.

Wright: It's only 12 month periods. He's glad they changed it to 12 months when he started this job. Wisconsin and Arizona are both doing furloughs. Part of the problem is that those schools are multi-campus systems, the drain on their resources is huge when they can't have students on campus.

JT: You wouldn't say that in any of the engineering departments, that we are top heavy?

Dean Wright: He doesn't think so, he thinks the university in general (don't quote him on this) is a little on the top heavy side. That's something he hopes to get across to the new president as he comes in. Since the budget cuts in 2016, we have lost 371 teaching and staff positions that directly support teaching. In that three year period, they have almost doubled the number of high level administrators. To him, that's the wrong place to be putting new people.

Dr. Alvarado: That is not a new trend, there have been articles about universities who have budget constraints, and they increase the number of administrators in hopes to more successfully manage operations. They can plan better but it creates confusing messages because everybody is trying to do something on their own. So, then it falls on the 'little' people.

Dean Wright: It's the people who are teaching classes and doing the research, that's what we're here for. One of his conditions, when the provost asked him to stay on as dean, was that he still be able to teach. It allows him to be more connected outside of the administrative tower. When everything switched online, continuing to teach allowed him to understand more of what was going on, be more involved.

John Oakey: Could you synthesize what you're hearing behind the scenes and project a vision for what life's going to be like in the department on campus for the next year or so? Chemical engineering is going to be out of assistant professors, with projections of hiring going forward, where does that leave us and other departments?

Dean Wright:

- He has been preparing for months, gathering data and numbers of teachers to get this case to move forward for the next fiscal cycle.
- Teaching resources are one of our biggest needs. We have more students, larger enrollment, with fewer people to teach.
- He wasn't going forward in CPN just to try to fill open positions, which in itself is important. Over 10% of the teaching faculty in the college are either retiring or resigning and going somewhere else. That's a huge number and a lot of semester hours cut.
- He wants to go beyond filling those slots, he wants to create more slots. If we're going to be Tier I, we have to be able to teach at a Tier I quality. This is hard to do when some of us are teaching

70-100 students per class. The president has said some things that may indicate he's still going to try hire more faculty, even in the midst of budget cuts.

- We know the vast majority of funds allocation at the university are departmental costs, so when we try to cut the budget, he doesn't know where they're going to get the money.
- We need more teachers, and this is his number one priority. When he met with the college advisory board that was his number one priority.
- He's also in touch with people who are big supporters of the college. All we can do is keep pushing that message and try not to get upset when it doesn't work out the way we want.

Dr. Alvarado: A related suggestion, the last time we cut faculty and staff, we lost a lot more staff when we already did not have enough. Sometimes it isn't seen how much the staff enables the faculty to do their jobs. We went from having two people in the office to only one person. This affects our ability to bring in an engineer to work in the labs, which can be a huge deficiency in our department, we need to send that message.

Dean Wright: The only optimistic thing he has heard is that David Jewel has said that the last time we made cuts there was no real forethought or strategy to it, they just got rid of open positions and let anyone take early retirement if they wanted it. He's determined to make it a more thoughtful process.

Dr. Alvarado: On a different note, could you share more about what teaching will look like? The teaching in the summer will essentially continue in the same mode we are in now. We're looking on how to continue in the fall, do you have any thoughts on that?

Dean Wright:

- Any classes taught over the summer will be online, in the same mode as the second half of the spring semester.
- Some workshops we hold during the summer such as ESP, a program to help introduce technology in the classroom, will be held online.
- The decision for what will happen in the fall hasn't been made yet. He's on a working committee and task force that have been working on deciding what to do.
- He got an email from the president of Perdue, who said they will be teaching in person in August. They've made their decision but there's a mix of universities who have decided one way or the other.

Mary: She thinks it depends on if you're in a hot spot or not. Hopefully, we will be back in a position where we can be back in person in the fall. If that doesn't happen, it will have a large negative impact on Laramie's economy.

Dr. Alvarado: In regard to supporting local/small businesses. We didn't have the party as planned, but he has been supporting small businesses. Some of the local businesses are struggling badly.

Dean Wright: Even for the couple of breweries in town, the only thing you can do is buy gift cards, they're completely shut down. It sounds as though the governor is thinking about a phase-in of businesses. We will see what happens as we're in better shape than just about any other state.

Dr. Alvarado: It's always good to be informed of positive views and perspectives. How have the faculty responded, overall in the college during this time?

Dean Wright:

- He has sent an email out at the end of each week, to touch base and stay connected.
- He is impressed with how the faculty has responded and adjusted.
- There have been some rough patches, people figuring out how to use certain kinds of technology, and still trying to figure out the best way to lecture.

Dr. Alvarado: Can you comment on how many Zoom meetings you have every day? How is your office operating?

Dean Wright:

- Sometimes the zoom meetings start at 7am, and go late into the night, they are fairly constant.
- He has time blocked off for class time, he pre-records a video lecture, and uploads it so students can look at it ahead of time. He has a synchronous zoom meeting with the class, along with the lecture, to talk about any questions that may have come up.
- So far, at the most, there's ten minutes on course material, and the rest is mostly just socializing. He just wants to connect with the students and have them connect with each other. He thinks it's important to maintain the normalcy of class times, it gives the students much needed structure.

Mary: Your class time is Zoom time?

Wright: Yes, class time is Zoom time, then another chunk of time to record the lecture. It's twice the amount of time as it would normally take.

Mary: There are a lot of other universities' that didn't double their time on spring break and didn't give their faculty as much time to be prepared for online teaching. Thoughts?

Dean Wright: He has been trying to send an email out every week to the students. Some will reply directly, with 1500 undergraduates, and over 250 graduate students, most of them are pretty positive.

Dr. Alvarado: John Oakey will share next about the biomedical engineering minor.

Biomedical Engineering Minor:

Dr. John Oakey:

- He has presented a proposal for a biomedical engineering minor. We are trying to build upon the success of the Process Control minor, trying to take our existing concentration areas and convert them into a loose structure students can follow as they populate their technical electives.
- It will go on their diploma as a credential. This idea has been well received by his students and advisees.
- Started off by developing a suite of biological and biomedical engineering courses, courses taught on a rotating basis, about every two years.

- The top course, CHE3100, Fundamentals of Bio Engineering, 'Biology for Engineers'. Then there are a suite of courses the students need to take to get the requisite biological background, in order to take the other electives.
- It replaces genetics and microbiology, and is concentrated into one hybrid class, part in the lab, part in the classroom. The lab portion has been led by Dr. Karen Wawrousek and has been very successful.
- Next slide, shows typical curriculum a student would need to take to complete the concentration area (converting this curriculum into a minor).
- We wouldn't have to develop any new courses, so it's very little cost in investment, except the cost of an administrator. It allows us to use CHE as a magnet to attract students to our program and the college.
- He did an online search for bio-engineering at UW, and the website provides mixed messages. People are told they should go into Electrical Engineering when searching for biomedical engineering, the option that appears is our biomedical sciences PhD program (has graduated 2-3 people over the past 5-6 years).
- We really want to use biomedical engineering as a magnet to attract students to CEAS and allow them to reach out and choose a degree area.
- It's a large investment, we don't know if we have the resources, he thinks it's valuable to have a foundational degree, in electrical, chemical, mechanical engineering, etc. We want to develop this minor for students who are getting a foundational degree.
- There are several tracks for several different majors that can also receive a biomedical minor. Mechanical, chemical and electric engineering, molecular biology students (prerequisite math courses required) and students preparing to go to medical school (regardless of major).
- The proposal has been reviewed by the CHE faculty, so CHE will be the home for the minor. The primary administrator/advisor for the minor will be in CHE.
- It's been reviewed by mechanical engineering, electrical engineering and molecular biology and the pre-professional advising in the pharmacy department. Feedback is now circulating to the curriculum committees for all departments.
- Steve Barrett will then review and have discussion at the Academic Programs Committee.

What to Expect:

- It will increase our gender balance, not only in the department, but in the college.
- Some other universities have introduced biomedical engineering programs that have affected enrollment numbers. He has no idea what students interests will be as we come out of this pandemic.

Mary: You mentioned that a lot of these courses are already being taught, so there's no additional work load for the faculty?

Dr. John Oakey: Yes, from a curriculum development prospective, we are already teaching the full suite of classes a student would take in CHE. What we'd like to do is also drive this for enrollment in these courses, being prescriptive in how CHE students round out this minor. We want them to take the full four 'core' classes that are required.

Mary: What is the timing of the minor being set, for people to receive the minor?

Dr. John Oakey: If the minor is approved in the current academic year, they should be able to have the minor on their diploma next spring.

Mary: You had indicated that there is no curriculum development required. Do you anticipate additional sections of the courses to be offered?

Dr. John Oakey: We only have one of these courses pushing any enrollment limit, CHE3100, because of the lab. We have 25-30 students in that course, maximum capacity for the lab space. Depending on popularity and demand we may add additional sections. The other classes are all classroom lecture based, with a small, practical lab component.

Marjorie Bedessem: You said the only other additional need was an administrator? Would that be a faculty member who is an administrator for the program or are you talking about administrative staff?

Dr. John Oakey: It would be a faculty advisor for the program. He imagines it would be someone like him, which would replace his former advising portion of the job description.

Marjorie Bedessem: It's not necessarily an additional cost?

Dr. John Oakey: No, but somewhere along the line, someone can say that it is a cost. It's an opportunity cost at the very least.

Dr. Alvarado: We might need to change the model of CHE3100, by adding more GTAs, TAs or undergraduates, which could curve some costs. Dean Wright, we may be able to use some program fees to help grader assistants in the lab to enforce safe operations in limited spaces.

Dean Wright: When we looked at the allocation of GTAs for the colleges (lab portions), it's certainly possible. He's on board to make this minor a reality.

Dr. Alvarado: Are there any other questions for John? He needs support so we can flesh out all the minors we have in mind.

Marjorie Bedessem: For the course CHE3100, Fundamentals of Bio-engineering, you said it replaces a lot of the biology, it's like the biology for chemical engineers, with microbiology components and genetics. Is it completely focused on the medical application? Is it an elective that Civils who are going to do biological treatment processes would benefit from, or not?

Dr. John Oakey: Absolutely. It's a very foundational/fundamental course. We teach them microbiology, DNA, RNA proteins, how they're synthesized and how we can genetically modify organisms to do our bidding. The very foundational aspects of biology that are relevant to everything from waste water treatment to chemotherapy.

Marjorie Bedessem: Is it an approved elective for civil engineering as well? Would it qualify as an improved elective?

Dr. John Oakey: Civils can take it, we don't discriminate.

Dr. Dave Bagley: Civil engineering would have to approve it themselves, they have a more complicated way of approving electives. We would have to ask someone in Civil.

Marjorie Bedessem: She's asking the question on whether it would be appropriate, she thinks John indicated that it might be, but that would be up to Civil.

Dr. Dave Bagley: As someone who has been in Civil, he agrees with John, that it would be a highly appropriate course for Civils, especially those interested in the environmental side of things.

Marjorie Bedessem: Thank you, that's something to look into, although it would increase enrollment in CHE3100.

Process Control and Chemical Engineering:

Craig Russow:

- He wants to share the work he hopes to accomplish between now and the end of July, relative to what's happening in process control and chemical engineering.
- We need to solidify some of the equipment donation interests still available, and how it would integrate into the current lab.
- He wants to address the scholarship funding opportunity that might be out there. There is also state match. That is for endowment purposes right now, but could go to scholarships. It is something we may be able to capitalize on.
- He hopes to get the assistant professor position, with process control. He has a candidate that is of some interest.
- Dr. Jerry Meyer was the dean of the College of Arts & Sciences for many years. This whole idea was his, on how to integrate with engineering. He thinks process controls is a great spot for someone who can come in on the teaching side of engineering and the research side of process control, and help out on the chemistry side in A&S.
- When the fund was set up, he suggested we can take care of the housing cost as they come in, generally speaking, they will be paid by the corporation they are working for.
- Dean Wright is looking at getting someone like this hired in our current situation, although we don't have an answer yet.

Dr. Alvarado: In the beginning, he thought it was going to be a full professor of practice, when he and Mary went to Houston to visit Shell, the lady they met there was fantastic. Mary, do you have an opinion about this opportunity?

Mary Shafer-Malicki: If we can focus on opportunities on how to get involved, we should be able to pursue these opportunities. She worries about trying to pursue things like individual companies that have chairs, etc.

Craig Russow:

- He's had some people from PETE that have stepped up, he thinks this speaks to the passion that goes towards helping UW.
- That's the part we forget sometimes, when the economics aren't working out. Hopefully we can replicate the passion we have for process control into all of engineering. If people are interested in the state funding document, he can pass it along.
- There is \$1 million going to the law school. They loved Tier I and the science initiative together, and another \$1 million opportunity to match. There's another \$4 million for the college of

Agriculture, which is perfect timing. He wants to get back to Rock Springs and Salt Lake as soon as they can travel.

Dr. Alvarado:

- To recap, Craig talked about the formulation of visiting professors, the equipment donation and the potential for scholarships.
- How do you see order, should these three things move forward in parallel form?
- Do you have plans for what would be best? From the point of view of attracting students, having scholarships would be best. But the equipment donation could come from more than one individual/company. Where should be put the plans for now, or should we move forward with all three things?

Craig Russow:

- JT has done a good job thinking about equipment we could utilize from a donation standpoint.
- We will have to sit down with the companies who are good friends of ours already, and ask what we could do now that would be impactful.
- Where the need is for scholarships in process control right now? Some may be met through different sponsorships or from companies/individuals. There is good organized support around this already, let's keep going and bringing people in.

Dr. Alvarado:

- There is going to be a slower market, but there are still things that people need. A lot of those things, we need as engineers, especially on the control side.
- The coupling between upstream and downstream in oil and gas in more recent years indicates that change is completely the way that companies operate, especially when they are not fully integrated, like they used to be. For example, you still need chemical engineers, but may not need as many petroleum engineers.

Mary Shafer-Malicki: A way sell CHE, is to say there are so many things you can do with the degree.

Craig Russow: He passes along Teddy's regards (who is on maternity leave), she is still interested in what's going on.

ABET:

Dr. Alvarado (on behalf of Joe Holles):

- Joe cannot be present at the meeting, he will be giving an update on ABET.
- Dr. Bagley is the Picasso of ABET, with a minimalist approach. We are doing what we need to do while keeping in mind that we don't do everything just for ABET, we need to balance the accreditation with the improvement year.
- The 2018-2019 year was an assessment year, continuous actions followed our four main, required courses in the program.
 - These courses are being addressed this year. Based on the assessment, this is a continuous improvement process.

- Joe Holles is the ABET Champion, and this is the only other position in the department, beside the department head that leads for longer than three years, because the whole cycle takes six years.
- ABET changed the A-K criteria to 1 through 7. That implies that we have to do remapping, Joe has taken the lead on our assessment remapping.
- We need to develop new assessments, later this term. We will restart in 2020-2021, from the fall semester of this year through spring and summer of next year, then we will have an assessment year.
- Final assessments are due in June 2021 with a visit in the fall. Because there is so much assessment improvement, the six year cycle goes very fast.
- The curriculum must include, in addition to the differentiation of equations in math, statistics in engineering problems.
 - We don't have to implement a new statistics course, we just need to incorporate enough content to include engineering problems. We will need to add these aspects to some courses.
 - The Unit Operations Lab has some of that content. College level chemistry and physics courses must have some advanced levels of statistics. For other programs, we have the same components design analysis control of processes.
- We are finding more regard for programs that have biomedical, chemical, and molecular in their titles. Linear algebra was there but not approved.
- 2019-2020 year had lab inspections as part of the process with some corrections. Instructors are being consulted in the university labs, we have had instructors in the lab that are not faculty or tenure stream faculty.
- David Bell and David Bagley helped with decisions on upgrades and changes in the lab. In fall 2020, we will have another inspection to make sure we have corrected things that relate safety. We will collect binders of information.
- We will have four courses this spring, because some courses are taught every other year. We will develop the course remapping for assessment criteria, that will then be approved by the committee and then approved by the department.
- ABET is all about documentation, if we don't have the evidence showing we have followed a continuous improvement program, it becomes a problem.
- Molly set up an ABET WyoCourses page, so all information can be uploaded and shared between multiple people.
- Dr. Saman Aryana, Joe Holles, Judd Larson and Kaspars assisted in updates for the Unit Operations Lab course descriptions. For those courses we have embedded statistics content, to address the program criteria change, which has been approved.
- There is still time to see if ABET will agree, but we have done a good job integrating statistics in the course work, it is taught once, emphasized and then used. There will be a report on the year end activities and start working on the sub-study.
- These are 600 page documents, some done by Dr. Holles, some in Steve Barrett's office. Steve Barret is a one of the finalists for the Associate Vice Provost for Undergraduate Education.
- 2020-2021 academic year, we will do assessments using criteria 1-7 and generate a year report. As long as we record consistent process, that follows the standards, things don't have to be exactly perfect.

Tom Findlow: In the fall he didn't do anything with the new committee. He interviewed Vladimir about expectations around the curriculum advisory group. This group would be part of the continuous movement concept of ABET, that would meet on a regular basis. The Industrial Advisory Board's expertise is not in curriculum, but we also need to be able to provide some input to the ABET committee.

Dr. Alvarado:

- When we cover statistics, we are taking a very academic approach. Having a committee from the Advisory Board has an advantage because we can get some good feedback.
- When you have students leaving with a degree and a set of skills and knowledge, it will help them in their future careers. People like Jessica and Mike, more recent graduates, can relate to this.

Dr. Alvarado: She (Jessica) has a perspective he doesn't have. Having more recent graduates feedback on this may help us to adapt better. David Bell is correct, we cannot make changes without seeing the effect on ABET and workloads. If we can incorporate the feedback during the process, that would be beneficial. The goal is to integrate things in a more organic manner.

Dr. Bagley: The IAB having a committee to examine our curriculum and provide feedback, is useful. We are more curriculum type experts with the job of taking ideas and figuring out how to educate our students. Getting the feedback from the IAB is fantastic, although it is a little extra work. It is going to strengthen our program overall.

Marjorie Bedessem: In forming the IAB curriculum sub-committee in the fall, and having the first meeting next week, it is a reiteration of the value that this committee could bring to the department. Who are the members of the committee?

Tom Findlow: Tom, Jessica, Steve, and he will try to recruit Dan. This might be something Mike Basden would be helpful on too.

Mike Basden: He would be interested in that, because he knows Shell's policy with control engineering (Shell has internal and external trainings).

Marjorie Bedessem: Tom could consider adding Mike to the list.

Tom Findlow: If he can make it that would be great, the first couple meetings are just going to be getting things started.

Committee Reports:

Marjorie Bedessem: Tom just gave a committee report for the Curriculum Sub-Committee we discussed embarking on in the fall. He also has Tom down for the Strategic Planning Committee, is that correct?

Tom Findlow: Lynn was the chair for that committee, but they haven't met at all. This was supposed to be a cascading effect from what the University's vision was, to the engineering vision and then to the chemical engineering vision. A lot of that lost steam, they didn't get anything from the engineering department, and he wonders how valuable it is to add this committee when there will be a new president, with a new vision.

Dr. Alvarado:

- Changes in leadership recently have made it hard to get everyone aligned and agree on some actions. Engineering started at full steam with a company, but nothing was implemented.
- We didn't wait for the whole university or college to take action, CHE developed the first set of guidelines for metrics. We had an ad hoc committee with Joe Holles, Dave Bagley and Saman Aryana, a faculty member from each rank.
 - We approved the metrics, and we are the first department to send it out to Dean Wright for review. We start to have documents that are official internally, to plan things without discussion about things we think are better. We may come back to that once leadership roles have been put in place.

Marjorie Bedessem: That will allow you to focus more on the curriculum committee, from the perspective of strategic planning. Next committee: Fundraising Committee - Mary,

Mary Shafer-Malicki: You already heard a lot of what exactly we are focusing on. We need to get to a point, and part of it is going to be using Foundation Resources and we will need to see what the environment looks like.

Marjorie Bedessem: Student Development Committee. Korby is the official chair.

Korby Bracken:

- He's trying to get all the employees back into the office. There are no real updates, he reached out to some principals and schools in Colorado to get in as an Advisory Board and help with the recruiting piece.
- In CO, they are shut down for at least the rest of the year as far as school goes, possibly in the fall. Principals and those who run STEM programs are interested in having people come talk to their students, to see if we can get some CO students to UW. In regard to Coronavirus, we need to take advantage of getting out to other schools on recruiting days.

Marjorie Bedessem: Next committee is Membership, Kevin Milliman.

Kevin Milliman: We don't have many updates, we did not follow up until this morning. As far as the proposed new member that Dr. Alvarado has brought up, we do not have enough data on that. For the fall, to revisit, is the pipeline of members and staff from an IAB perspective, and filling out the criteria for filling out the pipeline and insuring we get the right sector and balance.

Dr. Alvarado: Katie had suggested somebody and had sent information to Aaron, but it never got to your inbox Kevin, correct?

Kevin Milliman: If there was information that came to his inbox, he missed it.

Dr. Alvarado: He thinks Katie contacted Aaron about a new member.

Dr. Katie Li-Oakey:

- She did, she contacted three people, two of which are UW alumni. There were four people from three institutes.
- Two received CHE graduate degrees from UW, one is a professor at UPenn and the other is in the private sector at Boulder, in biostatistics. She went on to get her PhD and then post doc in the Bay Area and then moved back to the Mountain West.
- Two folks at one company in Laramie. The two UW alumnus confirmed that they would be happy to be on the board. Thank you Aaron, for sharing with them what they would be doing with their time. They are busy, and don't know if they would have the time to participate. She can share their CVs with everyone.

Dr. Alvarado: How many seats are left on the Advisory Board?

Marjorie Bedessem: She could use a current roster, one with the committee representation included.

(Molly will provide this information)

Korby: The IAB calls for up to 18 members, and he doesn't think we're there yet.

Marjorie Bedessem: The typical route is that the Membership Committee provides CV information for anyone they want to recommend to the board in general, and then the board elects the new member. As of today, is the Membership Committee, or Dr. Alvarado proposing a formal motion with respect to Michael? If so, how do we best handle that, since we are in an online meeting? We put Michael in a waiting room.

Marjorie Bedessem: **Who is making the motion?**

Kevin Milliman: **Proposed a motion to discuss adding Michael to a position on the Advisory Board.**

Marjorie Bedessem: **Are you making a motion to add Michael to the Advisory Board?**

Korby: **Yes, he moves to start a discussion about adding Michael to the Advisory Board.**

Dr. Alvarado: **Seconds.**

Marjorie Bedessem: Discussion:

Patrick Johnson: He had recommended Michael, he was one of the top students, and he did his QuickStart Masters in record time, then went on to get his PHD. The work he does is very relevant to our program, he is a very reasonable, nice guy.

Marjorie Bedessem: It's evident so far, his willingness to help and to chip in. He wants to help on the Curriculum Committee and that would be a great start for him.

Korby: Having a UW graduate is one of our criteria, and as a younger, more recent graduate he brings some balance and adds to the variance to the spectrum of people that make up the board. He supports that.

Dr. Alvarado: Jessica, do you know him from any interactions working at the same company?

Jessica: She has only run into him a couple times, although they both support Downstream but usually don't interact. Mike is a great guy, super nice, with an interesting background. It would be especially

good to have him on the board right now because he is starting to go into process control. We don't have a lot of people with process control background.

Dr. Alvarado: Patrick Johnson and himself, if there was a problem in the computer lab, they would check to see if Mike was there. He's a very nice fellow and is always willing to help people.

Marjorie Bedessem: Any other comments? **We will move to a vote. Motion of the floor and a second. All those in favor of adding Michael Basden to the IAB?**

All say I (unanimous)

Marjorie Bedessem: **Any opposed? None. Motion passes.**

Mike reenters the meeting.

Marjorie Bedessem: Congratulations, and welcome to the IAB. Mike is invited to the Curriculum Committee meeting next week.

Dr. Alvarado: Congratulations, thank you Michael.

Marjorie Bedessem: Any other board administrative business?

Dr. Alvarado: We should approve the board minutes.

Marjorie Bedessem: She had approved the meeting minutes at the beginning of the meeting, and they voted. This next set of minutes will be Molly's first task in summarizing those, as concisely as possible, with action items in red. We will try to circulate the minutes sooner rather than later, so we remember what we committed to in the action items. Molly will send first draft of minutes to (Marge and Dr. Alvarado) who will then pass it along. We will be having a meeting in the fall.

Dr. Alvarado:

- He can keep in touch once a month with updates on the current situation. We may have to have a hybrid meeting in the future. He had a meeting with Dean Wright about staying on as department head, he felt guilty dropping this on someone else in the middle of a pandemic, so he will continue to do the job. He will still pursue projects like having shared facilities, and getting sufficient support.
- Through the material science and engineering program and the research office we've tried to develop certain things with no success. It needs to be a bottom up approach. Dean → VP → Etc. If we can visit with the undergraduates, talking to the board, that would be helpful.

Marjorie Bedessem: Twice a year meetings are important to maintain momentum. So sub-committees aren't floundering and can talk about their progress. She is appreciative that Dr. Alvarado is staying on as department head for the time being. Planning for the fall, what was going to be done about the joint master's program in environmental engineering? What will be done to create a minor as a pipeline for that degree? Also looking at what the department has on its website, to make sure there is a link to that degree program.

Dr. Alvarado: We have had conversations with Dr. Saman Aryana in regard to updating the websites. We have talked about paying for website training, especially if potential students cannot come to campus.

Molly DeLau: She is looking into trainings and seminars on recruiting initiatives and how to make the website more accessible and attractive to prospective students. This will be a summer project for her, and she will be able to provide more information on the status of the project at the fall meeting.

Dr. Alvarado: We may be able to use some funding to support sprucing up the CHE website (graduate and undergraduate).

Marjorie Bedessem: For the IAB, is there anything anyone is interested in having on the agenda for the fall meeting?

Dr. Katie Li-Oakey:

- She is the Associate Director for Advanced Energy Studies, she hopes the IAB can contribute to the entrepreneurial activities. There are five entities, UW being one, each entity has an Associate Director representing the university. Wyoming, three universities in Idaho and the National Lab. A key focus area is to get more student jobs.

Marjorie Bedessem: Any feedback for Dr. Alvarado?

Kevin Milliman: In regard to enrollment, is there anything more you feel is important for the IAB to do? He didn't have a good understanding on how our trends are matching CEAS trends.

Dr. Alvarado:

- In Wyoming, the number of high school graduates is decreasing, we have already tapped out some counties, but we are still visiting to keep the 90% coming to UW. There was an incentive with scholarships and the Hathaway.
- From the point of view of the advisory board, for process control, the southwestern part of the state was hiring students naturally from Utah and western locations, it was easier to attract them from a similar region.
 - At the same time, we weren't training students in process control, so by doing this we make our students more attractive for employers.
- People in the northern part of the state, Sheridan, WY, the company Omit, they tend to hire from Montana. It's hard for them to attract the students, there's a corrosion problem with hiring chemical engineers. By establishing connections with a clear, appealing message, we can recruit outside of Wyoming, with a greater potential of attracting more students. We need to sell the message that you more education here at UW for a lower cost, even if it is out of state.
**Emphasize our specialties, and that we can connect to the market.

Aaron Reichl: They brought in high school counselors from the local community, they are the people a lot of students are talking to at the high school. He met with Laurie Bonini and Ann Jones who came out and talked about doing the same thing with the central advising group, to have their advisors make their way out and talk to potential students.

Dr. Katie Li-Oakey: She did this last year, using some research funding. Most local students don't even know what we're doing. If we combine these recruiting efforts with an update of the website, it will help bring an array of students from the nation. We should also focus on job placement, telling potential students that there is a great chance of them getting a job after graduation.

Marjorie Bedessem: We will be able to improve our efforts once the COVID-19 bans are lifted.

Dr. Katie Li-Oakey: Some of her colleagues are doing industry mentorships for career advice and professional skill training. In her Mass Transfer class, she did a survey on professional skills, would the IAB consider having a sub-committee on that? To have one or two mentees.

Marjorie Bedessem: She thinks IAB members would be qualified to do that. We can talk about how that might happen at the fall meeting.

Mary: Good idea, we can propose this and see who's interested.

Jessica: In our discussion, we can talk about the 'hand shake system'. She has been matched with several students, mentoring them on how to get a job. They are either current students or recently graduated.

Marjorie Bedessem: We don't need a committee, but we can talk about how we want to do this, and which members may be interested.

Dr. Alvarado: He hopes we didn't miss anything with this meeting by shortening it by 50%. If anyone has additional questions, please feel free to send feedback. Thank you all for taking the time for being here, the feedback has been very positive, but we still have things to do (meeting with Tom).

Marjorie Bedessem: Thank you for the willingness to make this a shorter meeting. We will get the minutes out to you in the next month or so. Don't forget to social distance.

Meeting adjourned: 11:54am