<u>Present</u>: Vladimir Alvarado, David Bagley, David Bell, Patrick Johnson, Joe Holles, John Ackerman Korby Bracken, Tom Findlow, Marjorie Bedessem. Stephen Ftaclas, Mike Thomas, Wyatt Keller, Billy Lew, Kevin Milliman, Maribeth Plocek, Aaron Reichl, Mary Shafer-Malicki, Len Switzer, and Elyse Johnson (Support Staff).

<u>Welcome</u>:

- Vladimir Alvarado welcomed the board and introduced the new Office Associate Senior Elyse Johnson.
- Bedessem moved to approve the agenda. All were in favor.

Department Update (See Attachment A):

- Dr. Vladimir Alvarado introduced the Chemical Engineering Faculty.
- Alvarado reported that in December a Material Science Engineering faculty position opened up. He began to put a good search committee together to fill the position. After the committee had been formed he discovered that the position was only being filled from within the college. After finding this out Alvarado excluded himself from continuing in the search. Patrick Johnson and John Oakey are still on the search committee. Patrick Johnson reported that SER wants a more senior candidate. Alvarado mentions that there are too many constraints on the search making it complicated, and poor communication is a factor. Marjorie Bedessem asked Johnson what will happen if no one is hired for the position. Johnson answered that there is no closing date for the position, and they are re-advertising it in the fall.
- Korby Bracken asked what the Chemical Engineering department's graduate program student to teacher ratio is. Alvarado answered that there are 200 students to 9 faculty members. Bracken questioned the higher student to faculty ratio. Alvarado continued that teaching capacity is an issue. The dean has not made any response to inquiries about why the student to faculty ratio is so high, and why more staff has not been hired.
- Alvarado went on to talk about that the department is focusing on material processes and CHE education. These things will actually bear fruit for the department. Patrick Johnson now serves as the Associate Director for the NASA-EPSCoR program.
- Alvarado continued that the Chemical Engineering department structure hasn't changed except that Joe Holles is now the ABET coordinator, and Patrick Johnson is the Materials Science grad program coordinator. Alvarado praised David Bell for his work with the undergrad program. His work has lowered the number of transactions with students.
- Stephen Ftaclas started a discussion about teaching capacity. Alvarado responded that the Dean wants enrollment up, but with such short staff this isn't feasible. He also brought up the point that how can a department promote when one person has too much teaching to perform. Alvarado suggested trying to find ways to make the department grow with demands.
- Alvarado reported that there has been some inflation in student numbers. The department lost 10 undergrads that were problematic, and took up a lot of the faculty's time. Now faculty can spend more time on current students.
- Alvarado went on to cover that the newsletter has been delayed. As soon as there is a slow period and Elyse can learn the software to make the newsletter, the newsletter will be worked on and completed.
- Alvarado reported that they hope to fill three faculty positions. One that was originally approved then sent back to CEAS. Next, a professor of practice. And lastly a temporary instructor to help with faculty teaching loads. Alvarado brought up that it would be helpful to have an AP/Unit Operations Manager to make sure we keep growing and function at capacity.

- Alvarado continued that there is an equipment shortage, and that we need new equipment and will take donations of used equipment.
- Alvarado reported that we have lost over 50% of our space, and are returning to 50% of what it used to be and the department can't expand in the building.
- Ftaclas asked about the endowment goals, and if anything was set up. Alvarado replied that the funds received from the endowment are small. The Chemical engineering department gets funds through the foundation, but the funding is not significant. There are no set fundraisers or campaigns right now. Mary Shafer-Malicki asked if we can receive direct gifts that go to us. Alvarado responded that general funding gets distributed over all departments. If we do get a direct donation, the department gets all the money, and endowments we only get part of.

Professional Advising by Laurie Bonini (See Attachment B):

- Laurie Bonini began that it has taken a year and a half to approve advising at the Engineering department and to work on how the change will make advising more consistent. This means looking at what resources the University can provide students with to better help them understand the curriculum and its breadth.
- Bonini continued that the department will move from a faculty based professional advising model, to the advising center, which will be operational by fall 2018. This will allow for consistent availability as it is staffed every day. Incoming freshmen will be assigned an advisor.
- Bonini reported that there will be an implementation of faculty mentors. These mentors will be available when specialized questions come up in an advising appointments.
- Bonini continued that seven positions will be filled, and each advisor will not oversee more than two hundred students. All positions have been approved for hire. The goal is to have all positions filled by June in time for freshmen orientation.
- Bonini went on that a common logo is being created. This logo will be put across every place on campus, on a webpage that will be set up, and on the bio of each advisor and philosophy. This will create continuity.
- Patrick Johnson asked if all advisors will be in an open area as this raises questions on confidentiality. Bonini responded that right now there are some closed and some open cubicles, but the hope is to do renovations in the future to enclose the open ones.
- Aaron Recihl asked how the process of hiring and training works for the advisors. Bonini responded that Ann Jones is making sure advisors are trained, understand career services, and are supporting her initiatives. This emphasis should encourage students to take advantage of career services.
- Ftaclas spoke about seeing the advantage for faculty not advising, but asked if there was a downside. Patrick Johnson responded that teaching and advising gets more in depth. Alvarado added that some students shy away from faculty. This change in advising would mean littler contact with the faculty. Bonini responded that advisors can encourage students to contact the faculty and department, and that professional advising provides a continuous base. Students will not have short appointments with advisors, and can ask specific questions.
- Bonini finished by talking about that other departments already have this sort of advising system set up. All departments that have these systems in place are having weekly advising meetings across campus.

Undergraduate Curriculum Updates by Dave Bell (See Attachment C):

- David Bell reported that the old main upper administration catalog has been cleaned out of obsolete class information. Sixteen Chemical Engineering classes were eliminated. Five were undergraduate, and were orphaned due to curriculum changes. Eleven graduate classes were eliminated because they were taught by former faculty.
- Bell continued to talk about the timing of graduation. It is important to work through the program in a timely fashion. The program is timed in a way that students want to be mindful of what classes they take so they do not end up having to attend an extra year. Many key lower division Chemical Engineering classes are offered more than once a year. Some CHE lower division classes also have engineering science equivalents, which can be substituted. The Dynamics class has been removed as a prerequisite for two classes. Two courses have been added, Process Analysis and Chemical Engineering computing. Both of these classes are now taught in the spring and fall.
- Bell went on to talk about most students being good at meeting expectations of curriculum rules, while others manage to get by with minimal effort. The Process Analysis course, which is a key class in understanding the fundamentals of CHE, was found to have a high failure rate which was found to be not because of difficulty. Bell specified that this was because students were not prepared to do the work required in the class.
- Bell reported to solve some of the issues that arose in the last advisory board meeting, prerequisites are being strictly enforced, there are no automatic transfer of courses it is now done on a case-by-case basis, and there is a limit on upper division CHE courses that can be taken at another university.
- Bell continued to talk about the transition to professional advising. He brought up that the advisors will know the CHE department rules, but may have difficulty with the interpretation of knowledge on technical subject content. Faculty are prepared for these situations, the new advisors may not be. A list of preapproved technical electives was made to alleviate part of this problem. Other electives on this list are allowed, but are subject to the old policy criteria.
- Bell reported that specific elective courses are not allowed to be taken and counted towards a CHE major. This includes any course that counts as a humanities course, and courses that are similar to CHE courses. The CHE course is required, and a petroleum course could possibly be allowed, but the student can't take both and get graded for both. This is because they are classes offered by different departments, but are modeled after one another.
- Bell went on to talk about Process Design courses. These classes are taken in a three semester sequence starting the end of junior year into senior year. Open ended group projects are started two thirds of the way through the first semester of senior year, and all of the second semester. (Please see attachment B for list of this year's projects.) Three of this year's projects were suggested by faculty, two were volunteered by John Meyer of UW's School of Energy Resources, one was introduced by an entrepreneur via Manufacturing Works, and one was proposed by a group of students. Each group has a mentor, and they all participate in weekly meetings either in person or by phone. Bell continued that there should be more group projects from the industry. Projects are selected in late August and students sign-up in early September. There is clear intellectual property for these projects, the university is owner of the projects and their findings/products. After the group project finishes the students must write a report and give a public presentation. Bell asked that if any Advisory Board members had ideas about potential projects to let him know.

ABET Update by Joe Holles and David Bagley (See Attachment D):

- Joe Holles reported that as of fall semester the department was approved for ABET. The department is now cleared and will have their next self-study in 2021, and our certification expires in 2022.
- Holles continued that the year 2017-2018 was considered an "improvement year." Changes were made based on the 2016-2017 assessment. The assessment matrix has been worked on, and it was found that previously changes related to ABET hadn't been documented. David Bagley came up with some terminology to make the challenges that the department had been having with ABET more clear and understandable.
- Holles went on that this summer a document will be written up to note what has happened regarding our ABET certification and will be shown to ABET. Some minor changes need to be made to assessments, so the next assessments will all be on the matrix.
- Holles finished with the information that we are as comfortable as we have ever been in the ABET process. ABET is making changes to a new and improved assessment plan approved for in the fall of 2018. We will need to use the new version in 2022. ABET is working on improving their process level information. The downside to this upgrade is there are changes to process, but they are not as extensive as the ones made in 2000 when the last big change occurred. The proposed changes came out, but are not approved until fall 2018, and won't go into effect until they are approved. Even though these changes are taking place we are allowed to use everything we've done so far through next year because the new rules aren't effective until next year.

Materials Science and Engineering (MSE) program by Patrick Johnson (See Attachment E) :

- Patrick Johnson reported that the MSE program currently has very good facilities, and has been meeting frequently every semester. There was great success at the seminar program lunch where the room filled with forty people and it brought in outside and internal speakers. The spring symposium brings big speakers, and is very successful. There are forty-five posters, and food and drink provided which helps with interaction.
- Johnson continued that the MSE program started to change the materials lab in chemistry. This was an inspired collaboration.
- Johnson went on to discuss the EPSCOR program. The EPSOCR program is in 20 states, and we are an NSF EPSCOR program, and this is what pays for our seminars and symposiums. The students and faculty also got to go to NASA because of this.
- Solution of the WSE program.
- Johnson continued that carbon engineering provides funding by providing graphing polymers. This funds a lot of researchers on campus. One half of our department is funded by it, which comes from funding from the School of Energy.
- Johnson went on to discuss how the NASA and EPSCOR renewal is coming up. The national meeting takes place in June.
- Johnson reported that starting the MSE minor was approved. All students can become either a grad or undergrad in this program. There are three focus areas that are solicited.
- Patrick continued with the information that the department is hoping to submit a proposal to NSF in June for funding.

MSE Technology Development – TRL + Other Acronyms by John Ackerman (See Attachment F):

- John Ackerman began with talking about how MSE has primarily been an educational research model. Currently the program is lining up to produce products from what is being done. MSE educates engineers on how to develop and plan resource practice reinforcing the educational ideas they have learned and transforming them into products efficiently. The goal is to utilize the TRL system, and to take logical steps towards developing new products. Levels TRL3 and TRL6 are very effective and are where it is possible to take things into manufacturing and introduction.
- Ackerman went on to talk about how TRL is wanted in education because we want students to go out and be prepared. It is important for this reason to have leading edge classes. Students having a solid grasp on these things taught in classes will help them jump start their career and life.
- Ackerman reported that we are using TRL levels in the university with our own products. With developing and marketing new products it is important to strike while the iron is hot. This discipline is new to our academic arena, but goes lock step with product development. The department wants to focus on this as a business discipline and intention, and coordinate with the MSE and business college. The hope is to get help from the VP of research. Ackerman continued that the focus should be on business plan and structure, and how the university interacts with the industry. So far this aspect has not been well defined, but this is being worked on. Starting to talk to the dean of research and other departments will encourage self-promotion. It will be important to manage equipment properly in order to be efficient with research.
- Ackerman finished with talking about how finding help to procure extra funding from either businesses or the industry is especially important to the Chemical Engineering department. The department has launched a program for products produced at the university, focused on culture and on making Wyoming economically viable in the technology sense. This program is trying to expand quickly and in a timely manner.

American Institute of Chemical Engineers by Sarah Kamphaus and Emily Lynch (See Attachment G):

- Lynch reported that during the fall of 2017 the AIChE took a trip and got to hear Mary Uselmann speak about Sinclair and GPA RMC scholarships. This will be helpful for student's futures and their careers.
- Kamphaus continued that Trevor arranged for a field trip to Altitude brewing for hands on experience with brewing beer. The students got to design their own beer. It was nice to be able to have someone local to get to work close with and to have a personal experience with brew making.
- Lynch went on to talk about the spring 2018 semester. There was another brew tour at New Belgium brewery. A fun ChemE activity was a Jeopardy game that was played. The group was unable to participate in the ChemE car race. The base level of the car had been built, and hopefully next year they can participate in the race. Lynch continued that next semester the group will take students around and show them what we do here, and so they can see the differences in what we do here and decide what they would like to do.
- Lynch reported that there are new officers of AIChE. Some are freshman and are newer faces. It's is great that the groups numbers are increasing, as well as being able to retain students from the past as well as graduate students which helps spread knowledge.
- Lynch went on to talk about the goals for the next year in AIChe and the CHE department. Attendance has been up by twenty to thirty people. Lab tours are going to be kept as a yearly event. Outreach will be worked on as it is not being focused on right now. AIChE is looking to introduce a new position, titled "Historian," who will take care of photography. Kamphaus continued that diversifying tours will be focused on. Having a variety of tours would be ideal. Kevin Milliman asked what the cause of increased attendance is. Lynch responded that it is most likely because of new things being enacted such as more

speakers and personal connections. Bracken suggested AIChE providing a list of things the group would like to see happen, rather than the board suggesting items. Bedessem offered a refinery tour as an option. Thomas suggested looking at jobs and career opportunities in the state, even though they are limited. Job fairs always seem to have the same people, it would be nice to see some new people and companies that reach outside the state.

- Alvarado asked to follow up on Thomas's question what worked for Kamphaus to find a job. Kamphaus replied that she spent a lot of time with Ann Jones on making resumes and cover letters. She said she gained confidence on trips, and with interacting with professionals on a different level. By interacting with professionals she said she was able to present herself in a professional manner and gain confidence in interviews and the profession overall. Kaphaus reported she secured her job through confidence based experiences. Alvarado suggested Kaphaus attend a career fair and tell her story.
- Lynch reported she is looking for internships and to promote REU programs more, and what they provide to the university experience. Ftaclas suggested promoting REU more, before career fairs take place.
- Kamphaus finished by reporting that Dr. Joe Holles won the David O. Cooney Outstanding Teacher of the Year Award.

IAB Committee Update:

- Ftaclas reported that the committee has taken on a lot more projects. Goals have been set, and it is being determined if the board is moving in the right direction with main department goals, or is the committee branching out to something of not great value. Any organizational management suggestions are welcomed. Work packaging has become quite large. Milliman agreed with this and said it brings about more accountability. Ftaclas asked if there has been any challenges or if any one feels there needs to be a new approach or idea. Switzer suggested brainstorming to find a better way to communicate between committees.
- Ftaclas went on that emailing documents to one another is cumbersome, and would it be possible to have something like Dropbox to be able to share information easily. Security was suggested as an issue, and wanting to make employers feel at ease. It was decided that whatever system the University uses would be best, and what the committee will pursue. Elyse will investigate. It would be beneficial to be using the same system as students. Ftaclas asked if anyone had any general issues with this, the board replied no.

Memberships:

- Ftaclas asked about memberships. Milliman reported that there are set target dates and goals to define what an ideal board looks like and to establish a plan for a pipeline of board members. Those goals have been drafted, and have been worked on, but haven't gone anywhere. The question was asked if the roster could be improved. Bedessem and Ftaclas are being copied on every correspondence currently. Elyse will send all members an updated electronic copy of the roster.
- Ftaclas went on to talk about how everyone has moved to different committees. Many people aren't sure who is on what committee. Ftaclas suggested Bedessem and he are the go between.
- Ftaclas continued to ask if Mike Achacoso will still be on the board since he no longer has any ties to Wyoming. Bracken suggested that Mike would still be a good asset on the board if he was still willing to help out because he brought a good, clear and active presence.
- Aaron Reichl proposed a descending opinion that Achacoso no longer representing Wyoming, doesn't meet the board's specific agenda, doesn't represent the Wyoming industry, focus fund, departmental objectives, or provide a vested interest. Alvarado pointed out that if Achacoso were to stay on the board

it would be a side project for him, and would have no bias. The board wants good bias and a vested interest. Alvarado continued that Achacoso has been replaced in the company he worked for by a woman named Kelly, who is a UW alumni. To keep continuity it was suggested Kelly should be asked if she would become Achacoso's replacement, and if she would serve on the board. Ftaclas moved to remove Achacoso and will reach out to him about adding backfill to the board and see if he is okay with leaving. Ftaclas continued that if Achacoso wanted to stay on the board and is passionate about it, and Kelly agreed to join, there could be a possibility of both being on the board.

Ftaclas went on to discuss if there are any other refining or chemical companies that could be brought in to provide fresh perspectives. Reichl responded that it is a struggle to find contacts in this aspect for people to reach out to. Ftaclas continued that the board should move forward and strive to add backfill, or wait and see what comes along as new relationships are made with new refining and chemical companies.

Fundraising:

- The prioritized goal is to have a list of five fundraisers to show CEAS and the Dean by June 1st, 2018. A short list of donors will be prepared by Shafer-Malicki, Thomas, and Lew by September 1st, 2018.
- Alvarado and Shafer-Malicki will get together and make a list and once this is complete the committee can move forward.
- Ftaclas suggested making sure any money made through donations doesn't get eaten up with too many tax deductions. Shafer-Malicki responded that there is nothing in place right now in that regard with the committee. Ftaclas went on to suggest to look at business donations and how they vary tax wise in regards to larger donations versus private donations.
- Reichl suggested departmental students call individual alumni and asking for donations. He suggested on the calls taking a different approach and to talk to the alumni about their past college experiences and then talking about what's going on currently on campus. Steve commented that old alumni emails have been deactivated so that line of communication has been lost. It was decided to have students make some phone calls that are better tailored to the committees fundraising needs, and that we need an item to pitch and a script. Sarah Kamphaus and Emily Lynch can be recruited to help find people to make calls. Shafer-Malicki agreed with this plan.

Professional Development:

- Bracken began by mentioning there are only two or three members, so any person is welcome to join this committee. Currently the committee is trying to increase engagement with students in terms of board opportunity. Also working on getting more students out to the fields for jobs and internships. There are seminars on campus on studies from professionals and experts to expand knowledge and give students experience. Seminars in other engineering departments help students to look forward to what lies ahead in their career. Currently MBA student meetings are the single source of information to get students out into the field in internship programs.
- Alvarado pointed out there needs to be more engagement because many students don't understand what they can do with a Chemical Engineering degree, especially what jobs they can get. Many students wait until their junior year to tailor their program, so they miss out on valuable internship opportunities which could go on their resume. Bracken responded that this topic would make a good seminar topic. Alvarado brought up that students box themselves in with their degree and what they can do with it. Bracken responded that the students are being taught how to solve this problem. Alvarado responded that the system doesn't matter, the student needs to understand the structure of their degree. Bedessem and Ftaclas responded that many students lean towards Civil Engineering, and that the University's website makes it look like this is the best degree to get. Reichl asked if there is a way to get a message

across campus about what you can do with a Chemical Engineering degree. Alvarado responded that a statement should be written to the board such as: The development of a chemical marketing professional begins with the preferred degree of Chemical Engineering or any environmental engineering degree. Ftaclas suggested writing up a testimonial or statement, and have the board distribute it. Alvarado responded that this needs to be targeted to the University specifically, and that it needs an argument. Bracken agreed and said this could be made with good reasoning.

- Switzer reported that a longer term goal is to show what a chemical engineer does. This can be shown to a broad group with seminars. A document needs to be made regarding this subject, it can be simple, but is crucial. Alvarado responded that it should consist of the same message, so it is something that students consistently hear, so it will stick with them. Findlow responded that it should include what engineers can bring to the table and how they can fit into different roles. Ftaclas suggested on the Chemical Engineering Advisory Board webpage, adding a bio and picture on each member to show students where they can go as a chemical engineer.
- Alvarado continued with how mechanical engineering is the most popular degree. It is hard to talk students into getting a chemical engineering degree because of misinformation. Reichl suggested getting the new advisors involved to break this trend. Alvarado responded that Laurie would be a good touchstone for this, and how we can engage the board with the advisors.

Senior Design and Peer Review:

 Keller is currently the only member of this committee. Two or three more people on the committee would be useful.

Strategic Planning:

- A new committee chair will be needed even if Achacoso stays. Switzer volunteered. Ftaclas responded that work packaging, and goals need to be worked on so everyone knows what others are working on.
- Currently no strategic plan has been received from the Dean. Findlow volunteered to help with building and implementing a plan, and is willing to help however needed to lessen the workload.
- Ftaclas responded that an outline needs to be made regarding the strategic plan, which includes aspects of the college plan, and be submitted to the Dean.
- Alvarado responded that bullet points should be made on what a good strategic plan looks like for the department. It is important to keep University's strategic plan in mind, but we don't have to align with it one hundred percent.
- The feasibility of an online graduate program was introduced. Ftaclas supported the idea and thought it would take some of the workload off of current faculty. Switzer suggested before pursuing this idea after a strategic plan is in place because it could be at odds with the plan. Ftaclas moved to postpone this idea until the strategic plan is drafted.
- Switzer, Plocek, Milliman, and Reichl will develop a plan of quality relationships between the Chemical Engineering Department and the industry. The goal is alignment, and to go bottom up instead of top down. This plan deadline was set for August 1st, and another round of editing will be done by the next Advisory Board meeting in October.
- Ftaclas continued with the current problem of student to faculty ratio, and wanted to know if the board can do anything to get faculty back up to a sustainable level.
 Staffing Issue:
- Alvarado responded that the fundraising committee should put pressure on the dean. The department can only raise so much money. Currently moral is high, but eventually it will come down. Right now staff is sustainable to keep staffing as it is. To fulfill the mission and the upcoming strategic plan the

department will need more faculty. Alvarado finished that this department has a lot of potential and could contribute a lot to the state of Wyoming and we need to attract people to fill positions.

- Milliman asked if the board could do one or two things right now to help the department what would they be? Alvarado responded that the first thing would be to get connected to the higher level, with the dean, to get accurate information. Currently we are getting information from back channels. Proper information would help us operate better. Alvarado continued that the second thing would be to stabilize the department with ranks. Currently the department searches constantly every year to find someone to hire. We need a better pipeline. Milliman responded and asked what the best way is to convey this to the dean. Alvarado responded that he wants the dean to support the department's fundraising, and to not get confliciting information. A formal letter to the Dean was suggested, but Shafer-Malicki responded that this wasn't a good idea. A formal letter isn't good, but a board member sending a casual message about the situation would be better. This was unanimously agreed upon.
- Findlow responded that the department is not efficient now. Ftaclas responded that the board should focus on making the department successful. Recihl responded that the dean should be casually questioned as to why the department needs to grow, but from semester to semester there are the same faculty numbers and ratios. Alvarado responded that he does not know why the situation is the way it is, there is no known reason. Alvarado raised the concern that the department could lose faculty if this situation does not get resolved. Reichl responded that answers need to be obtained from the Dean as a board as to why the situation of the department, or the answers it receives, does not change. Board was unanimous that Dean needs to be contacted by the board.

Board Administrative Business:

- Ftaclas suggested new language be added about removing board members, and will draft something for the next meeting in October.
- No old business.
- ✤ No one's term is up soon.
- No new business.

Feedback:

- Plocek reported that her company hires a lot of UW graduates, and she has found that writing skills are lacking from these past students. Alvarado responded that the University has emphasized oral presentations over written, so the writing skillset isn't strong, but he will bring this topic up in the next staff meeting.
- Ftaclas suggested for the next board meeting in October to do student only meetings to see what they observe about the department.
- Alvarado responded that two hours for the IAB Committee update was a good timeframe.
- Ftaclas suggested having presentations for board meetings at dinner the night before. Alvarado responded that Chalk and Cheese has done meetings such as this.

Meeting adjourned at 4:02 pm