

ChemE Faculty Retreat
Talaris Conference Center
September 20, 2019

Faculty Attendees: Jim Pfaendtner, François Baneyx, Eric Stuve, Vince Holmberg, Qiuming Yu, Cole DeForest, Stu Adler, Dave Beck, Chad Curtis, John Berg, Rene Overney, Dan Schwartz, Buddy Ratner, Brad Holt, Elizabeth Nance, Stephanie Valteau, Lilo Pozzo, Andy Kim, Charlie Sleicher, Barbara Kreiger-Brockett, Shaoyi Jiang, Graham Allan, Hugh Hillhouse, James Carothers

Staff Attendees: Kaitlin Colleary, Chloe Dewolf-Domingo, Lindsey Doermann, Kameron Harmon, Jesse Chiem, Debbie Carnes, Laura Pflum, Allison Sherrill, Nicole Minkoff

State of the Department: Presentation by Jim Pfaendtner

- 4 new faculty
 - Neda Bagheri (50% Biology, 50% Allen Institute for Cell Science)
 - Chad Curtis, Lecturer
 - Jun Liu, Professor (2/3 MSE)
 - Stephanie Valteau, Asst. Professor
- Departing faculty
 - Dave Castner
 - Venkat Subramanian
- Faculty snapshot
 - 28 ChemE faculty members [external]
 - 17 effective FTE [internal]
 - 25 ChemE faculty voters (quorum=13)
 - Non-voters: Bagheri, Cao, Posner
 - ChemE Chair votes (depending on context)
- Staff Updates
 - New communications manager (Lindsey)
 - Additional Fiscal Specialist 2 (now there are two: Katia, Maggie)
 - 2 new grants managers (Mesgana, Kelly)
 - New Admin Assistant 2 (Nicole)
 - ATC search: only open staff position
 - Context of changing staff dynamics (private sector openings, pay more)
- Faculty highlights
 - Elizabeth received PECASE, COE Junior faculty awards
 - Jenekhe appointed to Institute for Molecular Science & Engineering
 - Baneyx appointed Director of CoMotion

- 3 faculty promotions (Carothers, Pozzo, Pfaendtner)
- Research highlights
 - DeForest: Nature, Advanced Materials
 - Schwartz, Beck, and Murbach: Interface guest editors
 - Holmberg: Nature Communications
- New Multi-PI Grants
 - Adler: IUCRC Clean energy for data centers
 - Beck, Pfaendtner: NSF: Harnessing the Data Revolution
 - Carothers: NSF Rules of Life
 - Chen, De Yoreo, Pfaendtner: ARO Design principles for peptoids generated nanoparticles
 - Adler, Beck, Pozzo, NSF: Developing electrolytes for flow batteries
- Student Achievements
 - Special Design Program
 - Hugo Pontes: presented to congress
 - Erica Eggleton: presented at international seminar for women in stem
 - Linnete Teo, Victor Hu, Eggleton: open source database for NMC battery tests
- Recent faculty placements of ChemE PhD students (7)
 - Nannenga, ASU
 - Baio, Oregon State
 - White, Rochester
 - Shao, KU
 - Richards, Northwestern
 - Jaeger, U of Louisville
 - Sprenger, CU Boulder (2020)
- Year in Review: Student Enrollment
 - Bachelor's degrees in ChemE are steady and in line with targets
 - Increasing enrollment for DTC
 - Bachelors in MME participation is falling
 - Masters enrollment around 20/year (half staying 2 years)
 - PhD enrollment peaked 2015; Autumn 2019 severe drop (from 86 to 58 in three years)
- 10 Year Review
 - Main conclusion: Good, No new review for 10 years
 - Strengths:
 - Cusp of being top 20 program
 - DS efforts (clarify DS MS program)
 - Challenges
 - Sustainability of MS enrollment
 - Space in the department
 - Committee did not address department questions
 - Next steps: JP to respond to their findings by Nov 1

- Emphasis on Ph.D. program sustainability
 - Clarify research strengths and clusters, improved communications
 - Plan for ChemE space future
- ABET Preparation for upcoming site visit (Oct 2019)
- May 2019 Advisory Board Meeting
 - Recommendations:
 - Establish leadership structure to support leadership develop of junior faculty
 - Expose undergrads to wider range of scientific concepts (e.g., Automation, process measurement, design of experiments, lean manufacturing)
 - *Discussion: These recommendations come often (different topics—“flavor of the day”); Preparing the design sequence for next 10 years*
 - Focus upcoming faculty search in bio areas
 - Address pace concerns (avoid renovations until LT space plan created)
 - Address concerns about PhD program
 - Concerns:
 - Substantial misconceptions among students about UW polices, specifically Title IX
 - JP has instituted student Advisory Council
 - Advising team has worked with JP to promote inclusion, information sharing w/ students
- Chairs Advisory Council
 - Monthly meetings with student club leaders
 - Free form discussions
 - Partner with students to promote participation
- ChemE Advancement
 - 8 new major gift commitments (\$2.4 million total)
 - Including
 - 2 new endowed scholarships
 - 1 new endowed grad fellowships
 - Alumni engagement events
- 2019-20 plans
 - Faculty search
 - Approved for up to 2 tenure track assistant professors (Nov 22 priority deadline)
 - \$500k reserved for startup
 - No discussions on proviso hires...possible flip of 1 ChemE search to proviso

- Recruiting for lecturer full-time (spring search)
 - Communication channels with other ChemE depts.
 - DYSS Network launched
 - Mailing list of DYSS alum
 - Upcoming AIChE reception Nov 11 in Orlando
 - New regional chairs email list
 - New ChemE branded templates
 - Available on the MyChemE and Communications pages
 - Corporate and foundation relations
 - COE Advancement Office CFR officer: Sharon Dana
 - Priority: grow sponsored research and capstone projects for the department
 - Need faculty input on companies of interest, concepts for pitches
 - PhD program strategy and growth
 - Currently 58 PhD students (down from 86 in 2015)
 - At least 75% of the attrition due to faculty adding PhD students from other programs and growing number of postdocs
 - Top ChemE programs graduate 1.0 ChemE PhD students/FTE/year (we're at 0.4)
 - JP goal: growth to at least 20 FTE in the next 3 years
 - Stimulate growth in sponsored research
 - Grow endowed funds to cover more of 1st year and gap funds
 - Add non-research track MS students
 - Increase efficiency of PhD programs
 - ChemE community and climate
 - Diversity committee
 - Need to better support postdocs
 - Budget review and vote [**Handout: Department Budget**]
 - Overview:
 - Total Revenue: \$7,704,519
 - Total Expenditures: \$7,599,473
 - Balance: \$105,046
 - **Vote:**
 - **Motion to approve budget: Schwartz**
 - **Seconded: Pozzo**
 - **Voice vote: Motion PASSES unanimously**
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Committee Assignments & Vote: Presentation by Jim Pfaendtner

- Undergraduate Programs: Holt (Chair), Adler, Berg, Curtis, Drischell, Minkoff, Nance, Overney
 - i. Admissions: Holt, Nance, Drischell, Minkoff
 - ii. Assessment and Accreditation (ABET): Adler, Holt, Nance
 - iii. Scholarships: Berg, Drischell
 - iv. Special Design and Capstone: Pozzo, Pfaendtner
- Graduate Programs: DeForest (Chair), Beck, Carothers, Doermann, Hillhouse, Holmberg, Jiang, Overney, Sherrill, Stuve, Valleau, Yu
 - i. PhD admissions and operations: DeForest, Jiang, Sherrill
 - ii. Research MS admissions and ops: Yu, Sherrill
 - iii. DS MS admissions and ops: Beck, Sherrill
 - iv. GP marketing and coms: Doermann, DeForest, Beck, Yu
 - v. Application review support: Carothers, Stuve, Holmberg, Overney
- Infrastructure: Pozzo (Chair), Adler, Beck, Carnes, Chiem, Curtis, DeForest, Harmon, Holt, Kim, Yu
 - i. Renovation and Maintenance: Pozzo, Carnes, Harmon
 - ii. Computing: Chiem, Holt, Beck, Carnes
 - iii. Safety: Harmon, Holt
 - iv. SIF/Research Infrastructure: Pozzo, DeForest, Kim, Yu
 - v. Teaching Infrastructure: Harmon, Adler, Curtis, Holt, Kim
- Faculty Affairs: Stuve (Chair), Adler, ATC (tbd), Beck, Carothers, Hillhouse, Jenekhe, Nance, Pfaendtner, Pozzo, Ratner, Schwartz
 - i. Faculty search: Pozzo/Nance (co-chairs), Beck, Adler, Schwartz, Carothers, ATC (tbd)
 - ii. Awards: Jenekhe, Schwartz, Ratner, ATC (tbd)
 - iii. Pre-tenure/promotion review: Stuve, Hillhouse, Jenekhe
 - iv. PhD program strategy: Stuve, Pfaendtner, Doermann
 - v. Mentoring: Pfaendtner
- Trainee Affairs: Drischell (Chair), DeForest, Doermann, Holmberg, Kim, Minkoff, Nance, Pfaendtner, Sherrill, Valleau
 - i. AICHe: Kim, Minkoff
 - ii. ACES: DeForest, Sherrill
 - iii. WChE: Nance, Drischell
 - iv. Postdoc affairs: Pfaendtner
 - v. Grad seminar: Nance, Valleau, Sherrill, Minkoff
 - vi. DYSS: Holmberg, Valleau, DeForest
- Diversity: Nance (Chair), Carnes, Carothers, DeForest, Drischell, Minkoff, Pozzo, Sherrill, Student Reps
 - i. Discovery Days and outreach: Drischell, Minkoff, Nance
 - ii. Departmental diversity plan: Nance, Carothers

- iii. Best practices and continuous education: Pozzo, Nance, Carnes, Minkoff, Sherrill
- College and university committees
 - i. College
 - 1. Executive Committee: Pfaendtner
 - 2. Council on Promotion & Tenure: Hillhouse (9/15/20)
 - 3. Council on Educational Policy: Overney (6/30/20)
 - 4. College Council: Jiang (6/30/20)
 - 5. Accreditation and Continuous Improvement: Adler (indefinite)
 - ii. University
 - 1. Faculty Senate: Holt (6/30/19)
 - 2. Graduate Student Council: Overney (6/30/21)
 - 3. MoES Graduate Program: Holmberg (9/15/20)
- **Vote:**
 - i. **Motion to accept and adopt committee assignments as indicated: Schwartz**
 - ii. **Seconded: Adler**
 - iii. **Voice vote: Motion PASSES unanimously**

Facilities and IT Updates: Presentation by Kameron Harmon & Jesse Chiem

- Facilities Updates
 - i. Stephanie and Chad offices
 - ii. Updated grad student offices
 - 1. Pfaendtner
 - 2. Pozzo
 - iii. UO lab—new door facilitates better experiments
 - iv. New CNC mill (STF funds)—Kameron will train students interested in using this
 - v. Steam coil replacement (ongoing)
- IT Updates
 - i. Grad computer lab revamped
 - 1. New iMac workstations funded by STF (9 new iMacs)
 - ii. Dawg prints station in Benson 125 (UG lab)—sustainable printing solution! Creative Communications pays for printer, toner, paper, maintenance. Students pay for copies with their Husky Card
 - iii. New Xerox copiers coming soon (will replace the Ricoh copiers in the building)
 - iv. Software at ChemE: breakdown of costs
 - 1. MATLAB: \$135/device for UW-owned equip (students free on their personal computers)

2. Aspen plus: \$2200
3. COMSOL: \$3400
 - a. Department renewed before the STF proposal from Aero and Astro for free COMSOL
- v. Mathematica is now free (on UW and personal computers)
 1. Managed by the physics department

Research Update: Presentation by Hugh Hillhouse

- Focus topics: semiconductor physics, optoelectronics
 - i. understanding photo-luminescence
 - ii. Developed new way to estimate electron hole diffusion length materials
- Printable photovoltaics (complex inks of metal cations)
 - i. Perovskites (materials, devices, and machine learning)
- Ecologically-focused electrochemistry and photoelectrochemistry
 - i. A growing human health, environmental, and ecological problem
 1. Medicines, like antidepressants are ingested by humans and excreted (primarily urine); this waste goes to waste water treatment plant...eventually end up in the environment—drinking water contamination...they end up back in our bodies...these have an ecological impact on microorganisms, invertebrates, and vertebrates...Prozac found in juvenile chinook salmon at 5 ng/g in Puget Sound estuaries—propagate up the food chain—starving orcas
 2. Pharmaceuticals found in ecosystem and drinking water...growing global problem, and serious local problem
 - a. Lots of pharmaceuticals found in WA waters
 - b. Other things found in lower concentrations of higher toxicity pharmaceuticals (like chemo drugs)
 - ii. Some proposed approaches
 1. Better biological treatment (with better microorganisms)
 - a. Difficulty, costly
 - b. “Whack-a-mole problem”
 2. Adsorption (activated carbon, etc.)
 - a. Generates a lot of waste
 3. Membrane-based separation
 - a. Poor separation factors
 - b. High costs
 4. Advanced oxidation processes
 5. Electrochemical AOPs
 - iii. Status

1. Best technologies are too high cost
- iv. Hillhouse group approach
 1. Point source treatment of urine before dilution by direct anodic oxidation (put these devices in toilets, or include with prescriptions)
 - a. Advantages: can get started w/o regulation changes if low cost
 - i. Treat before dilution with other wastewater
 - ii. Treat before mixing with feces
 - iii. Urine diversion toilets already exists
 - iv. No added oxidizers and no waste products to dispose
 - b. Challenges
 - i. High concentration of urea and chloride
 - c. Hydrogen abstraction from urea by the hydroxyl radical is VERY SLOW compared with most organics
 - d. Large chloride concentration could form toxic by-products, but rapid reaction should sequester chlorine in long-lived chloramines
 - e. Hydrolyzed urine—ammonia lost over time with exposure to atmosphere

ABET: Presentation by Stu Adler

- ABET website w/ materials all online
- Voting issues
 - i. Revised Criterion 3 Outcomes
 1. Current PIs and rubrics seem adequate
 2. Caveats: update our documentation and renumber the PIs; new wording in outcome 5 (easier to measure)
 - 3. Vote:**
 - a. Motion to adopt current outcomes and renumber performance indicators: Adler**
 - b. Seconded: Pozzo**
 - c. Voice Vote: Motion PASSES unanimously**
 - 4. Vote:**
 - a. Motion that the AAC explore possible changes to the outcome 5 PIs (formerly outcome 7) to make them easier to measure: Adler**
 - b. Seconded: Schwartz**
 - c. Voice Vote: Motion PASSES unanimously**
 - ii. PI review procedures

1. 2016: AAC took over the task of reviewing outcome PI data
 2. Consequences: too slow (PI data is outdated), no pressure on faculty to provide data
 3. Proposal, June 2019: revert to the older process
 4. AAC would continue to manage outcomes, PIs, and rubrics, advice, and track ABET data
 5. **Vote**
 - a. **Motion to amend process so (1) each PI is assigned to a specific core course, (2), instructor creates assessment tool to measure the PI, 3) instructor implements assessment, 4) faculty submits an assessment report with their curriculum review package, 5) committees discuss, make recommendations, 6) AAC sits on both committees to assess the tools used to measure PIs: Adler**
 - b. **Seconded: Baneyx**
 - c. **Voice Vote: Motion PASSES unanimously**
- iii. Overarching subjects
1. Three overarching subjects taught across multiple courses:
 - a. Process hazards (a program criterion of AIChE)
 - b. Sustainability
 - c. Molecular and nano-scale principles
 2. Our only formal review process only requires reporting and tracking of sustainability—this leaves us vulnerable to ABET (particularly hazards)
 3. **Vote:**
 - a. **Motion to amend the list to just include process hazards and sustainability and then amend procedure to report on only process hazards and sustainability: Adler**
 - b. **Seconded: Schwartz**
 - c. **Voice vote: Motion PASSES unanimously**
 4. **Vote:**
 - a. **Motion for formal consideration by faculty next year: Undergrad committee reexamine process of overarching subjects and come up with a plan of which courses should cover these subjects: Pozzo**
 - b. **Seconded: Adler**
 - c. **Voice vote: Motion PASSES unanimously**
- iv. PI attainment—AY 2018-19

1. PI 1b: can the student formulate and solve a continuum shell balance?
 - a. Performance is less than 40% (Fall 2018, ChemE 330)
 - b. Reduced coverage of shell balances—embedded assessment was not entirely conclusive
 - c. Wait until Fall 2019 results in to take action
 2. PI 5a: Can the student analyze an ethics scenario using the AIChE code of ethics and propose a solution/course of action that weighs competing interests and identifies their professional responsibilities?
 - a. WI 2019, ChemE 437: about 60% attainment
 - b. Do we need to give students more guidance on analyzing ethical scenarios?
 - c. Students hadn't seen this framework prior to the assessment
 3. **Vote:**
 - a. **Motion that the UGC examine how ethics is covered in our program: Adler**
 - b. **Seconded: Allen**
 - c. **Voice Vote: Motion PASSES unanimously**
 4. A few PIs show about 70% attainment, threshold is 75%. Recommend waiting for more data to take action
- Site Visit logistics
 - i. Sun Oct 20
 1. 1:30-4:30 Lab Tours (Adler, Pfaendtner, Pozzo, Kim, Yu, Harmon)
 - ii. Mon Oct 21
 1. 9:30-10: Meeting w Chair (Pfaendtner)
 2. 10-12: Department interviews (various)
 3. 12-1:15: Lunch (Adler, Pfaendtner, 1 staff)
 4. 2:45-4:45: Department interviews (various)
 - iii. Tues Oct 22
 1. 11-11:45: Debrief (Adler, Pfaendtner)
 2. 2-3 Formal report of findings to COE (Adler or Pfaendtner)
 - iv. During 10/21 department interviews
 1. Senior class: 30 min (ChemE 435, somewhere between 10:30 to 11:20)
 2. Advisor team: 20 min (Driscell, Minkoff)
 3. AAC: 20 min (Adler, Holt, Nance)
 4. H&M, Thermo: 30 min (Holt, Adler, Jiang or Berg, Jenekhe)
 5. Transport: 25 min (Hillhouse, Pozzo, Nance)
 6. Reactor/control: 25 min (DeForest, Holt)

7. Labs: 25 min (DeForest, Kim, Yu)
 8. Design: 35 min (Holt, Stuve, Pozzo, 497 alums—Emily and Gabriel)
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Research Update: Presentation by François Baneyx

- CSSAS: Center for the Science of Synthesis Across Scales
- DOE funded, partners: UW PNNL, ORNL, UC, UCSD
- EFRC program
 - i. Flagship program of DOE BES
 1. 82 centers funded over the years
 2. Over 10,500 papers and 160 patents
 - ii. 2018 call
 1. 42 centers funded (\$100m)
 - a. 22 new centers (most at \$10.75m over 4 years)
 - iii. Actively managed by the DOE
 1. Monthly calls, mgmt. review, annual review...
- CSSAS mission: look to natural materials and bio-inspired synthetic materials to inspire cleaner energy applications
- Approx. 14 grad students, 11 postdocs across centers
- 12 PIs (6 UW, 3 PNNL, 1 UC, 1 ORNL, 1 UCSD)
 - i. Adding Lilo Pozzo this year as a seed-funded member this upcoming year
- Scientific Advisory Board (8): Juan De Pablo, Oleg Gang, Michael Hagan, Valeria Molinero, Rajesh Naik, Ron Zuckermann, Marco Rolandi, Rebecca Schulmann
- Scientific Approach (and outcomes): 3 thrusts
 - i. Thrust 1: Emergence of Order (quant links between design and order)
 - ii. T2: Building Hierarchy (predictive understanding of design features and solution conditions that drive materials growth and morph. evolution)
 - iii. T3: Achieving Dynamic Interventions (take understanding of T1 and T2 and apply MD to create real-time understanding)
- Building blocks
 - i. Proteins (Baker, Baneyx, Tezcan)
 1. De novo designed, site modified, SBPs
 - ii. Polymers (Chen, Jenekhe)
 1. Peptoids, pi-conjugated polymers
 - iii. Inorganics (Ginger, Cossairt)
 1. Atomically precise clusters, plasmonic nanoparticles

- Unifying theory and simulation: bridge disparate length scales and timescales)
 - i. Electronic to atomic (Mundy and Pfaendtner)
 - 1. DFT, ion pairing, chain conformation
 - ii. Atomistic to CG (Pfaendtner, Ferguson)
 - 1. MD
 - iii. CG to mesoscale (Ferguson, Mundy)
- Unifying characterization
 - i. High-speed AFM and PiFM (De Yoreo, Ginger)
 - ii. Liquid Cell TEM (De Yoreo, Kalanin)
 - iii. Hyperspectral Optical Imaging (Ginger)
- Shared NanoES space
- Ongoing projects
 - i. Protein design meets machine learning
 - 1. Baker, De Yoreo, Kalanin
 - ii. Peptoids meet computation and building blocks
 - 1. Chen, Mundy, Pfaendtner, Ferguson, Cossairt, Baneyx
 - iii. SBPs Meet Simulation & Colloids
 - 1. Baneyx, Pfaendtner, Baker, De Yoreo, Ginger

COE Update: Presentation by Greg Miller

- Leadership updates:
 - i. Nancy Allbritton named Dean of Engineering—starting 11/1/19
 - ii. Magda Balazinska named Director of Allen School
 - iii. Julie Kleintz appointed interim Chair of HCDE
 - iv. François appointed Director of Co-Motion
 - v. Jim P appointed Chair of ChemE
 - vi. Linda Boyle reappointed Chair of ISE
 - vii. Dan Ratner appointed AVP for Enrollment Management (Phil Ballinger is retiring)
- Legislative Update
 - i. \$2m in first year, \$4m in second and future years to increase engineering enrollment
 - ii. STARS funded at \$500k a year recurring
 - iii. Capital budget included \$4m for design of new engineering facility
- Campus priorities
 - i. Financial transformation: \$288m
 - 1. Will save UW 15%/year in costs
 - ii. Population health initiative
 - iii. Capital planning (execution/funding)
 - iv. Merit, workload standardization

- Faculty numbers increasing steadily
- COE general operating funds increasing steadily, as well (both ABB and supplement)
- Research expenditures also increasing (direct and indirect)
- Undergrad degrees and targets
 - i. 1350 degrees in FY 19 (up from 708 in 2008)
 - 1. 949 of these engineering degrees (exceeded proviso targets)
 - 2. Other 401 are CSE degrees
- All degrees are increasing EXCEPT PhD degrees
- DTC Updates
 - i. 2018 Cohort—Placements vs. 1st Choice Requests (first round)
 - ...second round in Jan
 - 1. ChemE: 30 placements, 28 were 1st choice requests
 - 2. Only 20 of the 820 students in DTC this year don't have any pre-existing college credits (through, for example, Running Start)
 - ii. Next steps
 - 1. Simplify the placement process
 - 2. College wide coordination of transfer student admissions
 - a. Reduce the duplication of effort when students apply to multiple majors
 - iii. 2019 cohort demographics
 - 1. 85 URM students (10.3% of total, 11.4% of domestic students)
 - 2. 34.5% women
 - 3. 5.8% (48 of 828) of the cohort requested ChemE as their major
 - iv. DTC Bump, ChemE UG 64 degrees in FY19...bump has increased to 80 degrees
- COE Growth—Facilities Needs...10 year COE Master Plan—coupling renovations with reconstruction
 - i. Different avenues for growth
 - 1. New construction
 - 2. Modernization and growth through renovation
 - 3. Repurpose space and develop partnerships
 - 4. Leased space
- Future opportunities
 - i. Further expansion of facilities necessary to serve students and grow research excellence
 - ii. Focus on research, faculty, and programs to increase impact and rankings
 - iii. Continue progress with diversity efforts

- iv. Continue to deepen connections with industry and community
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ChemE Direct to College Updates: Presentation by Brad Holt

- DTC Admission Cycle
 - i. First placement: occurred this summer (70% of slots)
 - ii. Final placement: Feb 2020
 - Procedure: students can choose to participate in round 1 of placement; they rank their departments; then the College/Department ranks students; if the number of students is less than the number of slots, then the students are placed in the department of choice, if not, the department is constrained and the department ranking is used
 - i. This year, 4 programs were constrained: Aero, Bioengineering, Computer Engineering, Mechanical Engineering
 - Looking at Final Admissions in Feb for ChemE DTC students
 - i. We hope to grow from 65 to total of 80 students...will we have enough students? How much attrition will we have?
 - ii. How will we generate student interest?
 1. DTC
 2. Community college (LY we saw 2/3 drop of community college applicants)
 3. "interest" changers
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Peer Review of Teaching Evaluations (and next steps): Presentation by Brad Holt

- Laboratory issues
 - i. Having labs checked out and ready to go at the start of the class
 - ii. Additional approaches to maintaining and improving experiments
 - Software
 - i. Use Python instead of Matlab (except Control)?
 - ii. Where and how to teach (375?)
 - Writing preparation of incoming students is deteriorating
 - i. Add credits to 436 with special writing instruction?
 - ii. Have a special section(s) of ENGR 231 assigned to ChemE
 - Separations (435)
 - i. Reduce/eliminate transport review to allow more time for separations
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OEA—2018 Senior Program Review: Presentation by Brad Holt

- Students asked what they like/dislike about the program and to discuss in small groups (on first day of capstone class)
 - Strengths:
 - i. Cohort system
 - ii. Computer lab
 - iii. Coordination between professors
 - Need improvement
 - i. Improved pipeline to industry
 - ii. Need more professors with industry experience
 - iii. Some prerequisites aren't sufficient
 - iv. Scrap molecular engineering—split content
 - v. Need more help securing jobs post-graduation
 - *Discussion: Need to set the expectation among students that it's not the role of the department to get them a job after graduation*
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Grad Program Updates: Presentation by Eric Stuve, Qiuming Yu, & Cole DeForest

- Our grad students are very motivated
 - i. GSS yesterday
 - ii. GS recruiting—lots of logistics, 22+ visitors this year, many post-deadline visits
 - iii. Strong participation in professional development organizations (ACES, WChE, AIChE)
- Current enrollment: 58 (down from 72 this time LY)—really need 85 students to meet our goals
 - i. Graduated 20 PhDs in past year
 - ii. Low enrollment (decrease in size is a concern among our students)
 - iii. Great diversity (44% female, 10%URM)
- Consider future changes in grad awards
 - i. Current awards
 1. Faculty lecture award—leave as is
 2. High impact award—favors large groups with many multi-author pubs; fundamental/LT studies require several years to take hold
 3. Leave TA award as is
 - ii. Possible changes
 1. New distinguished PhD research award-based on results presented in general exam (to replace high impact award)
 2. New distinguished MS thesis award
 3. Award for diversity?
- Recruiting 2018-2019

- i. 306 applications—made 48 offers...only 9 accepted (target was 12)
- ii. Lessons learned
 1. Rankings are crucial!!
 2. Apply non-uniform probability of student acceptance
 - a. Higher ranked students have lower probability of acceptance (lower ranked students have higher probability)
 3. Do not release wait list before April 15
 - a. Concerned that we had too many acceptances, we released the wait list one week early this year
 4. On April 15 (or earlier if necessary)
 - a. Contact wait-listed students if acceptances run short; invite for visit
 - b. Tell students that they can withdraw their acceptance from other school on or before April 15 (we did this, but could have done better)
 5. Post-deadline acceptances (after April 15)
- General Exam Policy
 - i. Department policy:
 1. Exam to be taken by end of third year in residence
 2. One retake possible in following quarter
 3. Failure to take exam by this time results in
 - a. Unsatisfactory progress
 - b. Academic probation
 - ii. Policy stated in the Grad Handbook
 1. Students well-informed
 2. Faculty compliance is good, with some exceptions
 - iii. Benefits of third-year general exam
 1. Motivates students to review their progress and course-correct if necessary
 2. Lays the groundwork for the student's first publications
 3. Can be a wake-up call for students who are falling behind
 - iv. Ramifications for non-compliance
 1. Students are classified as not making satisfactory progress
 - a. Ineligible for certain awards and scholarships
 - b. Given low priority for elective TA assignments

Research MS Program: Presentation by Qiuming Yu

- Applications have remained steady (admitting approx. 20 students/year)
 - i. Between 12018-2019
 1. Increasing male applicants

2. Decreasing Chinese applicants
 3. Increasing domestic applicants
- 2019 incoming MS students: 19 total (majority international)
 - i. 14 males, 5 research track/4 data science
 - ii. Increased number of women
 - iii. Large increase in students from Taiwan
 - iv. Decrease in students from India
 - Average GPA 3.54
 - i. Average GRE V 60%, GRE Q 90%, GRE W 39%
 - Majority of MS students on Thesis Track
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Data Science Master's Program: Presentation by Dave Beck

- 22 applications, 14 offers extended; 6 of 22 applicants from Chemistry
 - 3 students joining us this fall (all hold BS ChemE); 1 student deferred for 2020
 - Soft recruitment this year
 - Upcoming recruitment efforts
 - i. UW grad school fair
 - ii. Email outreach
 - iii. Info sessions
 - iv. Promote DS MS alongside other ChemE grad opportunities
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Grad Committee and PhD Program Plans: Presentation by Cole DeForest

- PhD program is shrinking
 - This year's student project crunch
 - i. 9 PhD students
 - ii. 15 faculty interested in recruiting for 17 PhD positions
 - iii. 15 faculty interested in recruiting for 17 PhD positions
 - iv. Limit faculty to 1 PhD student max, and only to those that had expressed need for a student last spring
 - v. 13 projects are being offered
 - PhD Graduate Recruiting 2020: February 28, 2020
 - i. All hands on deck (even if you're not recruiting)
 - ii. Switch up recruitment festivities—current students are burning out (even though recruits like these things)
 - iii. We've traditionally relied on first-year students to help with planning—CHALLENGE this upcoming year; may involve more senior students this upcoming year
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GRE Requirement Discussion: Presentation by Eric Stuve & Elizabeth Nance

- Growing movement nationwide to stop requiring GRE for grad admissions
 - i. We could be the first ChemE program to drop GRE requirement
- ChemE's historic use of GRE in admissions
 - i. Occasionally used if there was a lower-GPA person
 - ii. GRE quantitative consistently high
 - iii. GRE analytic/verbal scores have been use to evaluate borderline candidates/assess fit
- ChemE does NOT use GRE in admissions currently for PhD applicants—they do the following: (in order of ranking)
 - i. GPA and individual course grades
 - ii. References' implicit bias most prominent
 - iii. Personal statement
 - 1. Not cookie cutter
 - 2. Interests and motivations reveal authenticity
 - 3. Persuasiveness
 - 4. Writing style
 - 5. Compliance
 - 6. Especially important when application are near the cut-off
- For ChemE MS applications
 - i. Primary: grades, GPA
 - ii. Secondary: Letters of rec, personal statement, resume
 - iii. Tertiary: TOEFL and GRE scores
- GRE is prohibitive to specific populations
 - i. Financial barriers
 - ii. Biased questions
- GRE scores do not predict which PhD students pass their qualifying exams or graduated, or how long they spent in the program
 - i. Applicants with higher GRE scores get better grades in their grad courses
- Possible next steps
 - i. Drop GRE requirements for PhD MS or both (UCSD also intends to drop
 - ii. Remove from the online application
 - iii. Collect more data
- No vote now, will surface at upcoming faculty meeting
- *Discussion:*
 - i. *TOEFL requirement will still be in place*
 - ii. *Many countries have limited GRE testing sites*
 - iii. *GRE fees are a financial burden for students*
 - iv. *GRE scores can still be useful when evaluating vague applications; can also help you gauge admissions numbers (willingness to*

accept offer)—should be how the info is used; to alleviate financial burden, could allow students to email unofficial copies of GRE transcripts

Diversity Committee Update: Presentation by Elizabeth Nance

- Founded 2016; added students to committee last year
 - 2018/19 recap
 - i. Community events: Veterans Day, Women, Pride, Industry
 - ii. Continuous improvement: required sexual harassment training in new grad orientation; safe zone training for students; coordination of RSO efforts
 - iii. Best practices: child-adoption tenure policy; faculty hiring rubric and diversity statement; rubric and job postings
 - iv. Diversity plan: current department “stats,” and diversity activities/initiatives
 - 2019 goals
 - i. finalize diversity plan
 - ii. best practices
 - 1. implicit bias training for hiring and admissions committees
 - iii. continuous improvement
 - iv. support participation in the university climate survey from all department members (survey open Oct 8-Nov 8)
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Data Science Initiative: Presentation by Lilo Pozzo & Dave Beck

- Celebration of recently funded grants re: data science for PIs in the department
 - Personal observations on the DSI
 - i. Most of these grants are multi-PI grants
 - ii. NSF and DOE are leading the way; NIH starting, too
 - iii. Everyone has or wants to have Machine Learning in their apps
 - iv. Need for differentiation—confounding ML, MD simulations and general computational tools is easy for PIs and reviewers
 - v. Unlike “nano”, not everyone will be able to ride this wave
 - vi. Resources (eSciences) and track-record will help differentiate UW-ChemE
 - vii. Experimentalists: high-throughput methods, image analysis
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Trainee Affairs: Presentation by John Berg, Andy Kim, Cole DeForest, Elizabeth Nance, Vince Holmberg, Jim Pfaendtner

- Scholarships in great shape
 - AIChE updates
 - ACES updates
 - i. GSS
 - ii. New Student Orientation
 - iii. Recruitment
 - iv. Anti-Elevator Pitch (discussion of failures)
 - v. Lots of social events
 - vi. New initiatives
 - 1. Twitter account
 - 2. PD workshops (and 1-2 credit seminars)
 - 3. MS initiatives
 - 4. Canvas page to aggregate grad student resources—building off of similar UG page—FAQ
 - WChE updates
 - i. Successful 3rd annual industry event
 - 1. 215 attendees, 14 panelists (7 UW ChemE alumni)
 - 2. 15+ sponsors, \$8500 raised
 - ii. Introduce a Girl to Series: 200+ attendees
 - 1. Next event: Feb 22, 2020: Renewable energy
 - iii. Expansion to 2 additional chapters
 - 1. 4th chapter in process (ASU)
 - 2. 4 additional institutions are interested
 - 3. National framework in progress
 - iv. 4th annual fall industry panel: Nov 7, 5pm- MoIES, NanoES
 - Seminars
 - i. Exciting lineup of seminar speakers this year
 - ii. Encourage attendance
 - Postdocs
 - i. Recent postdoc appreciation event
 - ii. About 20 postdocs in ChemE
 - 1. 2 females
 - 2. 13 temporary visa holders
 - 3. 5 permanent residents
 - iii. Postdocs unionized May 2019—went in effect Aug 1
 - 1. Minimum \$50,004 compensation
 - 2. UPASS is free
 - 3. Can use paid family leave
 - 4. Option of enrolling in UW healthcare
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Faculty Search: Presentation by Lilo Pozzo & Elizabeth Nance

- 2018/19 review
 - i. Overview
 - 1. 330 applicants
 - 2. 261 applications reviewed
 - 3. 38 reference letter requests
 - 4. 10 zoom interviews (new LY)
 - 5. 5 who did campus visits
 - 6. 2 hired
 - ii. Implemented diversity statement requirement
 - iii. Rubric included equal weighting of diversity statement with track record, proposed research and proposed teaching
- 2019-2020: 2 lines (assistant prof) available for hiring
 - i. How to best target research area of focus?
 - 1. Most interested in energy systems, data science, bio-e systems, polymers, colloids (not devices)
 - 2. Find the best candidate, independent of research area
 - 3. Considerations around Castner and Lidstrom retirement (maintain dominance in biomaterials)
 - 4. Teaching capability for core course curricula, particularly labs
 - 5. Slightly accelerated timetable this year—LOTS of folks on the market
 - ii. *Discussion:*
 - 1. *Do we target “fresh” applicants straight out of postdoc, or encourage lateral moves from assistant professors at other universities?*
 - a. *If more senior assistant professors making lateral moves, these candidates will still need to stay in rank for 2 years before they can be considered for promotion*
 - 2. *Anyone who’s going on seminar this fall should keep an eye out*