

- Learning Analytics Hackathon, University of British Columbia (UBC) Centre for Teaching, Learning and Technology (CTLT), In-person workshop analyzing and visualize student learning data from courses using Tableau software. 12 hours, January 27-28, 2017
- Responsible Conduct of Research Workshop, Collaborative Institutional Training Initiative (CITI Program), Online training on dealing with ethical issues in scientific research, the publishing process and student supervision, 5 hours, January 5, 2017
- Health & Safety Committee Training Course, UBC Risk Management Services (RMS), Online and in-person training course required to be a member of a departmental health and safety committee, 5 hours, November 8, 2016
- Instructional Skills Workshop (ISW), CTLT, In-person training on how to analyze and improve pedagogy and lesson planning, 24 hours, August 16-18, 2016

Short workshops (< 3 hours):

- Introduction to Jupyter Notebooks and scientific computing in Python, WestGrid Research Computing Summer School, in-person workshop on utilizing Jupyter Notebooks in teaching, 3 hours, June 20. 2017
- Finding, Using and Remixing Open Resources for Your Courses, CTLT, in-person workshop on utilizing open educational resources in courses, 1.5 hours, February, 27. 2017
- Open Practices: Teaching and Learning with Wikipedia Roundtable, CTLT, in-person workshop and discussion on getting students to create and edit Wikipedia articles in courses, 1.5 hours, February 1, 2017
- Brightspace Exploratory Session for Faculty, CTLT, in-person showcase and discussion on one of two possible new online learning management systems at UBC, 1.5 hours February 1, 2017
- Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: Core), Panel on Research Ethics, Online training required in Canada for research on human subjects, 3 hours, 24 January, 2017
- Developing your Skills as a Peer Reviewer of Teaching: Introductory Workshop, CTLT, In-person training on how to conduct peer reviews of teaching, 3 hours, January 24, 2017
- Using your teaching Portfolio to Showcase your Educational Leadership, in-person workshop on creating an effective teaching portfolio, 1.5 hours, Dec 6, 2016
- Positive Space Workshop, UBC Inclusivity and Diversity Office, in-person workshop on creating an inclusive space at UBC for gender and sexual minorities, 2 hours, Nov 21, 2016
- Learning Analytics, CTLT Scholarship of Teaching and Learning (SoTL) Community of Practice (CoP), in-person workshop on uses of learning analytics to improve student learning with case studies on the use of these tools in the Faculty of Arts at UBC, 1.5 hours, November 15. 2016
- Adopting Open Textbook and Resources: Teaching and Learning Enhancement Fund (TLEF) Support possibilities, CTLT, in-person consultation on creating a TLEF application for the creation and adoption open resources in the Chemical and Biological Engineering (CHBE) 241 course, 1 hour, October 4, 2016
- Exploring the SoTL Explorer Tool, CTLT SoTL CoP, in-person workshop on using the SoTL Explorer Tool to categorize and explore previous pedagogical innovation projects

such as TLEF grants for relevant ideas to apply in your own teaching practice, 1.5 hours, October 3, 2016

- Chemical Safety Course, RMS, Online and in-person training on laboratory chemical safety, required for all personnel working in lab environments with hazardous chemicals, 3 hours, September 1, 2016
- Learning and Teaching Hub Open House, CTLT, in-person event to showcase the variety of programs offered by CTLT to support teaching, 1 hour, August 24, 2016
- Welcome to Teaching at UBC Workshop, CTLT, in-person workshop providing an introduction to teaching at UBC and highlighting experiences of recently hired faculty, 2.5 hours, August 22, 2016
- Engineering Design Team Safety Orientation, RMS, online workshop on safety training specific to engineering design teams, 0.5 hours, August 9, 2016

6. EMPLOYMENT RECORD

(a) *Prior to coming to UBC*

| University, Company or Organization | Rank or Title | Dates |
|---|----------------------------------|-------------------|
| Teaching Enhancement Initiative, Faculty of Engineering, McGill University | Research Assistant | 09/2014-04/2015 |
| Tomlinson Project in Undergraduate-Level Science Education, McGill University | Lead Graduate Teaching Fellow | 06/2014-01/2016 |
| Department of Chemistry, University of Paris South (Paris XI) | Visiting Doctoral Researcher | 12/2013 - 06/2014 |
| Tomlinson Project in Undergraduate-Level Science Education, McGill University | Graduate Teaching Fellow | 09/2011-12/2013 |
| Department of Chemical Engineering, McGill University | Undergraduate Student Researcher | 05/2010 - 08/2010 |
| Department of Chemical Engineering, McGill University | Undergraduate Student Researcher | 05/2009 - 08/2009 |

(b) *At UBC*

| Rank or Title | Dates |
|---------------|-------------------|
| Instructor | 08/2016 - present |
| | |

(c) *Date of granting of tenure at U.B.C.:*

7. LEAVES OF ABSENCE

| University, Company or Organization at which Leave was taken | Type of Leave | Dates |
|--|---------------|-------|
| | | |
| | | |

8. TEACHING

(a) *Areas of special interest and accomplishments*

My main area of interest is in design education, which is an essential component of engineering practice. Design in Chemical and Biological Engineering (CHBE) involves developing equipment and large scale processes to manipulate chemical and biological systems in order to produce value-added products. In order to do this, students need to iteratively analyze problems, formulate solutions and assess their feasibility for application. For students to develop these skills, the problems they tackle must be broad enough in scope to require knowledge from multiple courses. Design education culminates in our program with a 4th year industrial-scale design project undertaken over an entire academic year.

In order to understand how to effectively implement design into the 2nd and 3rd year curriculum I have sought to understand design experiences throughout the CHBE curriculum. I have examined curriculum content and design activities in the general first engineering year curriculum, which all engineers at UBC must take, specifically in the introduction to engineering courses (APSC 100/101). In the second year of study, students in the CHBE program learn to analyze industrial chemical and biological processes through coursework in CHBE 241: Material and Energy Balances. I have previously taught CHBE 241 and will teach the course again this coming academic year (2017/2018). Having taught the course once, I am focusing on modifying the CHBE 241 course extensively to highlight the application of chemical engineering design in local industry. These development activities are further discussed in section 9a. In the 3rd and 4th years of our program, students are exposed to computer process simulation, which allows students to rapidly design and cost equipment. I have audited both core simulation courses offered, CHBE 376 and CHBE 476, and I will be teaching CHBE 376 in the coming academic year. Finally, in order to understand how students apply their design knowledge, I have assisted and will continue to assist with the 4th year plant design course (CHBE 453/454) by attending lectures and advising design groups. Through these activities I have gained a holistic picture of the design activities in our department and I am focusing on continuing to support and improve them through departmental initiatives as well as my own teaching activities.

Outside of the core courses discussed above, which all students must take in our discipline, I have sought to disseminate my process design knowledge in other fields as a guest lecturer in courses such as FNH 309: Food Process Science and CHBE 487: Interfacial Phenomena. I have also brought my research knowledge from my doctoral studies into the classroom through a guest lecture on clathrate hydrates in CHBE 483: Energy Engineering.

(b) Courses Taught at UBC

| Session | Course Number | Total Scheduled Hours | Class Size | Total Hours Taught per Course | | | |
|-------------|---------------|---------------------------------------|------------|-------------------------------|-----------|------|-------|
| | | | | Lectures | Tutorials | Labs | Other |
| 2017/18 W2* | APSC 366 | 39 Lecture | 55 | 9 | 0 | 0 | 0 |
| 2017/18 W2* | CHBE 376 | 39 Lecture 12 Tutorial | 134 | 39 | 12 | 0 | 0 |
| 2017/18 W1* | CHBE 362 | 2 Lecture 10 Dry Lab 18 Wet Lab | 113 | 2 | 10 | 18 | 0 |
| 2017/18 W1* | CHBE 241 | 39 Lecture 12 Tutorial | 189 | 39 | 12 | 0 | 0 |
| 2017/18 W1* | CHBE 483 | 39 Lecture | 45 | 1 | 0 | 0 | 0 |
| 2016/17 W2 | FNH 309 | 39 Lecture 13 Tutorial | 100 | 2 | 1 | 0 | 0 |
| 2016/17 W2 | CHBE 487 | 39 Lecture | 9 | 0 | 0 | 0 | 1.5 |
| 2016/17 W1 | CHBE 241 | 39 Lecture 12 Tutorial | 193 | 39 | 12 | 0 | 0 |
| 2016/17 W1 | CHBE 483 | 39 Lecture | 45 | 1 | 0 | 0 | 0 |

* Indicates expected future teaching engagements at time of writing

Brief Descriptions of the courses and my activities:

APSC 366 – The Art of the Possible: An Introduction to Engineering for Non-Engineers

- Course Description: An introduction to engineering for the non-specialist. A case-studies approach includes examples from sustainability-related technology, consumer products, structures, and energy conversion.
- I will co-instruct the course with 3 other instructors from Mechanical, Electrical and Civil Engineering and am responsible to teach a module on chemical engineering.

CHBE 376 – Computer Flowsheeting and Fluid Properties Estimation

- Course Description: Theory and practice of computer flowsheeting in chemical plant design; hands-on use of modern process simulators, prediction of thermodynamic properties of fluids; behaviour of single and multiphase systems.
- I will be the sole instructor responsible for the delivery of the course.

CHBE 362 – Process and Environmental Engineering Laboratory

- Course Description: Experiments to illustrate and use material presented in 200 and 300-level CHBE courses. Field trips may be required.
- I co-instruct the course with Dr. Dhanesh Kannangara, students work in teams of 4 to complete laboratory exercises.

CHBE 241 – Material and Energy Balances

- Course Description: Introduction to Chemical and Biological Engineering; units; stoichiometry; phase equilibria; material balances; energy balances.
- I am the sole instructor responsible for the delivery of the course.

CHBE 483 – Energy Engineering

- Course Description: Supply and use of conventional and alternative fuels and energy. Design and operation of unit operations for processing of fossil fuels, biomass, and other energy sources. Environmental considerations of energy use.
- I gave a guest lecture on “energy and environmental aspects of clathrate (gas) hydrates” on October 5, 2016 and October 6, 2017. Gas hydrates were the focus of my PhD thesis.

FNH 309 – Food Process Science

- Course Description: Preservation of tissue and fluid food systems by selected physical and chemical treatments with emphasis on product-process interactions.
- I offered two hours of guest lectures and one hour of tutorial on “food dehydration technologies” and “intermediate moisture foods” on February 1 & 3, 2017. These lectures focused on food processing equipment design, which is a form of chemical processing, and aligns with my background and special interest in chemical plant design.

CHBE 487 – Interfacial Phenomena

- Course Description: Outline of the physics and chemistry of interfaces; discussion of the part played by surface effects in technical processes.
- I ran a feedback session for students’ course projects on February 9, 2017. These projects focused on a product or process involving interfacial phenomena, which in the case of chemical production may involve equipment design.

(c) Students Supervised

Students supervised in Teaching Projects

I have supervised students conducting teaching development projects. A more detailed description of these projects can be found in my Teaching Dossier.

Graduate Students

- Jun Sian Lee – OpenChemE Teaching and Learning Enhancement Fund (TLEF) project, *building online homework problems in WeBWork*, 170 hours, May 2017 – March 2018
- Ruben Govindarajan – OpenChemE TLEF project, *building online exam repository and guided solutions*, 170 hours, May 2017 – March 2018
- Amir Maleki – UBC Center for the Integration of Research, Teaching and Learning Teaching as Research Project, *Can a mini lesson on self regulated learning improve students’ academic performance?*, 200 hours, June 2017 – June 2018

Undergraduate Students

- Victor Chiew – OpenChemE TLEF project, *curating an online openly available textbook*, 170 hours, July-August 2017
- Jamie Ngai To Lo – OpenChemE TLEF project, *curating an online openly available textbook*, 170 hours, July-August 2017
- Said Zaid-Alkailani – OpenChemE TLEF project, *curating an online openly available textbook*, 170 hours, July-August 2017

(d) *A summary of student evaluations of teaching effectiveness scores over the past five years (or since appointment if less than five years)*

- Average student evaluation scores are available in the table below for CHBE 241, the course I have taught thus far. Full student evaluations with student comments as well as specific reflections, planned improvements and actions taken can be found in my teaching dossier.

| Teaching Evaluation Questions | Average Score* |
|---|----------------|
| Q1. The instructor made it clear what the students were expected to learn | 4.2 |
| Q2. The instructor communicated the subject matter effectively | 3.8 |
| Q3 The instructor helped inspire interest in learning the subject matter | 3.7 |
| Q4 Overall, evaluation of student learning (through exams, essays, presentations, etc) was fair | 3.7 |
| Q5. The instructor showed concern for student learning | 4.6 |
| Q6 Overall the instructor was an effective teacher | 4.0 |

*1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree

(e) *Continuing Education Activities*

- Summer Institute: Can I use this? Exploring copyright & open educational resources, UBC CTLT, in-person workshop introducing the use of open resources in courses. Co-facilitated with Dr. Christina Hendricks, Peter James and Will Engle, 1.5 hour, August 30, 2017
- Summer Institute: Course Goals and Learning Objectives, UBC CTLT, in-person workshop introducing how to write and use course goals and learning objectives . Co-facilitated with Sue Hampton, 1.5 hour, August 28, 2017
- Faculty Instructional Skills Workshop, UBC CTLT, In-person training on how to analyze and improve pedagogy and lesson planning for Faculty across UBC. Co-facilitated with Dr. Sarah Sherman, 5 faculty, 24 hours, August 22-24
- CHBE Departmental Instructional Skills Workshop, UBC Department of Chemical and Biological Engineering, In-person training on how to analyze and improve pedagogy and lesson planning for graduate students in the CHBE Department some of whom were being trained for the Vancouver Summer Program, 6 students, 24 hours, June 13-16
- Vancouver Summer Program Training, UBC Department of Chemical and Biological Engineering, In-person training on class planning for graduate students as part of the Vancouver Summer Program, run in conjunction with the Departmental Instructional Skills Workshop (ISW), 5 students (in addition to the 6 students in the ISW), 6 hours, June 13

- Finding, Using and Remixing Open Resources for Your Courses Workshop, Centre for Teaching and Learning, UBC Okanagan, in-person workshop introducing the use of open resources in courses. Co facilitated with Dr. Michelle Lamberson and Sajney Lacey, 1 hour, May 3, 2017
- Open Scholarly Practice Workshop, CTLT, in-person workshop exploring the use of open resources in scholarly research and teaching. Co-facilitated with Will Engle, Erin Fields, Cindy Underhill and Lucas Wright, 1.5 hours, March 27, 2017

(f) *Visiting Lecturer (indicate university/organization and dates)*

(g) *Other*

Advisor - CHBE 453/454 – Biological/Chemical Process and Product Design

CHBE 453/454 is the major design course in our program. Students design and economically assess a major biological or chemical engineering process. Students perform the synthesis of a detailed design for a practical and environmentally sound process. I regularly meet (4 hours/week) with students and course instructors throughout the academic year to support student groups in their chemical plant design projects. I also attend lectures when my teaching schedule permits. In 2016W I was involved in student assessment through individual interviews at the end of each semester as well as student poster presentations on design day on April 7, 2017. I will continue to advise in the course each year until acquiring my professional engineering license, which is required for teaching major design courses.

Graduate Teaching Activities

I have contributed to improving graduate education in the department by facilitating professional skills development through the workshops listed below:

- Facilitator, Research Integrity Workshop, CHBE UBC, 4 hours, January 9 & 23, 2017. I facilitated group discussions on case studies for groups of 6-8 graduate students attending the workshop
- Facilitator, 3 Minute Thesis Practice Session, CHBE & ECE UBC, 1.5 hours, January 19, 2017. I gave students feedback on their 3-Minute thesis presentations.

Undergraduate Teaching Activities

Outside of my formal course teaching load I have contributed to undergraduate education by facilitating industrial tours and providing feedback on student work as listed below:

- Evaluator, CHBE 262 – Chemical Engineering and Applied Chemistry Laboratory student poster presentations, 2 hours, March 31, 2017. I evaluated and gave students feedback on their poster presentations.
- Evaluator, CHBE 492/494/496 - Undergraduate Thesis, 3 hours, March 27, 2017. I evaluated and gave students feedback on their undergraduate thesis proposals.
- 3rd Year Local Industrial Field Trip Coordinator, 3 hours February 10, 2017. I led students on an industrial tour of the False Creek Neighborhood Energy Utility.

- Evaluator, CHBE 491/493/495 - Undergraduate Thesis Proposal, 3 hours, November 28, 2017. I evaluated and gave students feedback on their undergraduate thesis proposals.
- 3rd Year Local Industrial Field Trip Coordinator, 10 hours, September 26 & 28, 2017 I coordinated travel and led students on industrial tours of the CertainTeed Drywall plant, Seymour-Capilano Water Treatment plant and Central City Brewery.

Courses Audited:

CHBE 376 – Computer Flowsheeting and Fluid Properties Estimation

- Course Description: Theory and practice of computer flowsheeting in chemical plant design; hands-on use of modern process simulators, prediction of thermodynamic properties of fluids; behaviour of single and multiphase systems.
- I audited the entire 3-credit course in the 2016/2017 W2 term in preparation for teaching the course in the next academic year.

CHBE 476 – Modelling and Optimization in Chemical Engineering

- Course Description: Mathematical modelling of chemical plants and processes; computer simulation; introduction to numerical optimization techniques.
- I audited the entire 3-credit course in the 2016/2017 W1 term to better understand simulation software, as well as the expectations of students using this software in their 4th year design projects.

9. EDUCATIONAL LEADERSHIP

(a) Areas of special interest and accomplishments in educational leadership

The focus of my educational leadership has been to improve design experiences in the CHBE program, with specific focus on the 2nd and 3rd year. I am accomplishing this by proposing the redevelopment of a 2nd year course, CHBE 243, to allow greater focus on design. I am also incorporating design activities into various departmental courses to ensure students continue practicing design principles throughout their studies.

Following the first iteration of teaching CHBE 241, I have successfully applied for a Teaching and Learning Enhancement Fund (TLEF) grant to integrate more design content into the course. I will do this by reducing lecture time in class in order to incorporate team-based learning activities on problems faced by engineers in the discipline. To reduce lecture, I will support comprehension outside of class by seeking and organizing open educational resources, such as videos and textbook passages, related to the subject. I will also provide students a rapid feedback method on their comprehension of course material through automatically graded online quizzes. These will be hosted under the WeBWorK platform and accessible for use by the broader academic community through the WeBWorK Open-Problem Library. These changes will engage students by providing personalized feedback on their learning and allow them to apply course content to authentic design problems encountered in engineering practice. I have also partnered with Mr. Michael Schoen and Ms. Estella Qi, who teach technical communications in the department, to build case studies focusing on industrial examples that I will cover in CHBE 241 for their technical communications class. This will ensure students understand the link between technical communication content and industrial practice.

I have pursued opportunities to integrate design into the curriculum in courses other than my own by collaborating with other faculty. Notably, I have helped re-design the pumps and valves workshop with Dr. Dhanesh Kannangara. The redesign has improved the setup significantly by allowing students to explore the differences between manual and computer sensors, as well as their comprehension of signal noise and error.

One crucial component of all these interventions, is the need to provide evidence to show their effectiveness. In order to do this, I have successfully applied to become a UBC Faculty Associate, as well as supervising Amir Maleki in a Teaching As Research (TAR) proposal funded through the UBC Center for the Integration of Research, Teaching and Learning. These programs will provide training and support to measure, evaluate and disseminate effective teaching practices.

(b) Curriculum development/renewal

2nd Year Design Course Development

CHBE 243: Introduction to Chemical and Biological Engineering Process and Technology is currently a 1-credit course that introduces students to processes used in chemical and biological industries. I have developed a proposal in consultation with Dr. Dusko Posarac and Dr. Gabriel Potvin in the department to expand this course to 3-credits and teach students about the chemical and biological industries through engaging in process design. Further details on this proposal as well as the proposed course syllabus can be found in my Teaching Dossier.

Vancouver Summer Program – CHBE

I have been actively involved in the development of a summer course offering in Chemical and Biological Engineering led by Dr. Gabriel Potvin and Marlene Chow. The program comprises 2 courses, Introduction to Biological Engineering and Introduction to Chemical Engineering, which are each the equivalent of a first-year 3-credit course. The program was offered in the summer of 2017 with 45 students. Dr. Potvin or I were present at all lectures, which were mainly delivered by graduate students trained in the department. I oversaw twelve 3-hour class sessions and invigilated the two 3-hour exams. We plan to expand our offerings in summer 2018 by continuing to offer the same package as well as adding a second course package.

(c) Pedagogical innovation

Chemical Engineering Practice - CHBE 241: Material and Energy Balance & CHBE 243: Technical Communications

I am working with Mr. Michael Schoen and Ms. Estella Qi to develop case studies for CHBE 201 focusing on chemical plant design. These case studies will focus on chemical plant material balances, process equipment selection, economic analysis and safety analysis.

Pumps and Valves Workshop Renewal - CHBE 262: Chemical Engineering and Applied Chemistry Laboratory

I have led the redevelopment of the pumps and valves workshop in the department's second year Lab Course (CHBE 262) with Dr. Dhanesh Kannangara. This is one of students' four lab activities performed during the semester. My role was coordinating the design and construction

of a new setup as well as redeveloping the lab manual, student assignment, and teaching assistant training.

(d) *Applications of and contributions to the scholarship of teaching and learning*

- Contributions in terms of scholarly work can be found in the publication record section of my CV.

(e) *Teaching and Learning Grants*

| Granting Agency | Subject | \$ Per Year | Year | Principal Investigator | Co-Investigator(s) |
|---|--|-------------|-------------|------------------------|--|
| BC Campus - Open Education | Open Education Resources Grant: WeBWork online Homework Problems for Mechanical and Chemical Engineering Courses | \$7,500 | 2018 | Dr. Jonathan Verrett | Dr, Agnes D'Entremont, Dr. Patrick Walls, Dr. Peter Crompton, Mr. Jim Sibley |
| UBC CTLT Faculty Associate Program | Integrating and measuring the effect of design in the 2 nd and 3 rd year of CHBE curriculum. | \$10,000 | 2017 & 2018 | Dr. Jonathan Verrett | |
| UBC Teaching and Learning Enhancement Fund (TLEF) | Open ChemE: Increasing authentic student learning through open educational resources | \$27,977 | 2017 | Dr. Jonathan Verrett | |
| UBC Center for the Integration of Research, Teaching and Learning | Teaching as Research: Evaluating the Impact of educational experiences on student learning | \$7,000 | 2017 | Mr. Amir Maleki | Dr. Jonathan Verrett |

(f) *Formal educational leadership responsibilities*

Curriculum Design Integration

The CHBE department's continual program review for accreditation has identified the opportunity to integrate greater design content into the 2nd and 3rd year of the CHBE program. I am responsible to identify opportunities and implement pedagogical changes in order to increase design education in our program.

Advisor - CHBE Student Design Teams

I have been assigned as the advisor for a number of design related teams in the department including ChemEcar and Engineers for a Sustainable World. I believe these activities contribute significantly to student design experience and hope to increase student participation in these activities. I have done this by mentoring students, ensuring safety, and providing logistical support to groups in finding space and acquiring resources such as funding for conference travel. More information on this can be found in section 11 of the CV, service to the university as well as my Teaching Dossier.

(g) *Innovation in the use of learning technology*

Online Quizzes - CHBE 241: Material and Energy Balance

I have used the online learning management system, Connect, to integrate weekly online quizzes into my course. These are used to understand student progress in the course as well as points of confusion. I use results from these quizzes to adjust my teaching each week. For the 2017W course I have moved these quizzes to the WeBWorK platform to give students more immediate feedback as well as more in-depth numerical questions for practice.

(h) *Other educational leadership contributions*

- Formative Peer Review of Teaching Reviewer, CTLT, January 2017 onwards, I have conducted 2 formative teaching reviews with colleagues in the Faculty of Applied Science by observing their classroom teaching and providing written and oral feedback. These colleagues were Dr. John Frostad (CHBE) and Dr. Paul Lusina (Electrical and Computer Engineering)
- Member and contributor, Open Education Working Group (Open Pack), I have developed and delivered workshops to showcase open education resources and initiatives, February 2017 onwards.

10. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) *Areas of special interest and accomplishments*

(b) *Invited Presentations (Identify whether International/National/Local)*

(c) *Other Presentations*

(d) *Other*

(e) *Conference Participation (Organizer, Keynote Speaker, etc.)*

- Logistics Co-Chair, 2018 Canadian Engineering Education Association (CEEA) Annual Conference

11. SERVICE TO THE UNIVERSITY

(a) *Areas of special interest and accomplishments*

My service to the Department has focused on preparing for accreditation as well as supporting student experiences outside of the curriculum, particularly in design and laboratory work. When I started my role, there was no consistent policy and documentation for evaluating laboratory safety of undergraduate team projects. This resulted in confusion and lost time on the part of students, staff and advisors. In consultation with lab instructors, staff and students in the department, I developed an undergraduate team safety package. This package mirrors the approach taught in departmental lab courses and is available for all student teams on the CHBE website.

My impact as an advisor is demonstrated through the student team's size and successes. The ChemEcar team, consists of students from Chemical and Biological, Mechanical, Mining and Electrical and Computer Engineering. It was one of two teams selected to represent Canada at the World Congress of Chemical Engineering ChemEcar competition in Barcelona Spain in October 2017. I have also coordinated for 21 students to attend the AIChE Regional Conference for ChemEcar, oral and poster presentations. This is the largest group of students ever attending from our department.

I strongly believe that engineering should be welcoming to gender, racial and sexual minorities. Outside of the classroom I have completed the positive space campaign and am a resource person for lesbian, gay, bisexual, trans, two-spirit, queer, questioning, intersex, asexual, and all other (LGBTQIA+) members of the UBC community. I have collaborated on research on gender in engineering with Dr. Agnes D'Entremont (Mechanical Engineering) and Dr. Kerry Greer (Sociology) resulting in published work. I also actively participate in department outreach events, helping members of the broader community understand the importance and impact of engineering on society.

(b) *Memberships on committees, including offices held and dates*

Department:

- Member, Curriculum Committee, September 2017-present
- Member, Accreditation Committee, September 2016-August 2017
- Faculty Advisor, UBC ChemEcar, 2016W and 2017W academic year
 - Supervise use of room 174. Review and revise lab procedures for experimental safety. Support student travel and funding requests.
- Faculty Advisor, Chemical Engineering Undergraduate Students' Society, 2016W and 2017W academic year
 - Organized student attendance at the American Institute of Chemical Engineers regional student conference. Including coordinating travel and hotel. This included organizing an oral presentation competition at UBC for the 6 student applicants vying for the 3 presentation spots available at the conference.
- Faculty Advisor, Engineers for a Sustainable World, 2016W and 2017W academic year
 - Co-supervise use of CHBE Lab 536 with Dr. Naoko Ellis. Responsible for safety of biodiesel reactor.
- Faculty Advisor, Engineers Without Borders, 2016W and 2017W academic year

Faculty:

- Member, Broad Based Admission (BBA) Committee, 2016W academic year

(c) *Other service, including dates*

Department:

- Summer Student Lab Supervisor, coordinated the work of three departmental work-learn summer students focusing on laboratory development and the Vancouver Summer Program, May-August 2017
- Industry Advisory Council (IAC) presentations, presented updates on the accreditation process and IAC feedback as well as my role in the department and the integration of design into the 2nd and 3rd year curriculum, 3 hours, May 4, 2017
- Sanofi Biogenius host, hosted the Sanofi Biogenius competition in collaboration with Dr. Gabriel Potvin and Marlene Chow, my role was in ensuring the site was set up as well as giving student participants a tour of the department, 4 hours, April 11, 2017
- Lab Tour Host, UBC Minigeers, 2 hours, March 4, 2017
- Judge for CHBE research day student oral presentation competition, January 26, 2017
- Undergraduate Student Research Award (USRA) Review and Ranking, February, 2017

Faculty:

- Host and Lab Tour Guide, UBC Applied Science Open House, 7 hours, Nov 26, 2016

University:

- Community and Membership Coordinator, UBC Instructor Network, August 2016-present
- Positive Space Resource Person, November 2016- present
- Panelist, CTLT external review on workshop sessions, November 28, 2016

12. SERVICE TO THE COMMUNITY

(a) *Memberships on scholarly societies, including offices held and dates*

- Member, American Institute of Chemical Engineers, 2017-present
- Member, Canadian Engineering Education Association, 2013-present
- Member, Society of Chemical Industry, 2011-2016
- Member, Canadian Society for Chemical Engineering, 2008-present

(b) *Memberships on other societies, including offices held and dates*

(c) *Memberships on scholarly committees, including offices held and dates*

(d) *Memberships on other committees, including offices held and dates*

(e) *Editorships (list journal and dates)*

(f) *Reviewer (journal, agency, etc. including dates)*

Journals:

- Journal of Natural Gas Science & Engineering (1 paper, 2016) to maintain my connection to research and incorporate this into my teaching.

Conferences:

- Canadian Engineering Education Association Annual Meeting, Toronto, 2017

(g) *External examiner (indicate universities and dates)*

(h) *Consultant (indicate organization and dates)*

(i) *Other service to the community*

- American Institute of Chemical Engineers (AIChE) Student Design Competition Judge, 4 hours, Sept 1, 2017

13. AWARDS AND DISTINCTIONS

(a) *Awards and nominations for Teaching awards (indicate name of award, awarding organizations, date)*

While at UBC

- 2nd Year Teaching Award, UBC Department of Chemical and Biological Engineering Undergraduate Club, 2016-2017

Prior to Final degree

- Faculty of Engineering Outstanding Teaching Assistant Award, McGill University Faculty of Engineering, 2015

(b) *Awards for Scholarship (indicate name of award, awarding organizations, date)*

Prior to Final degree

- Transatlantic Partnership for Excellence in Engineering Award, Erasmus Mundus Program, 2013-2014
- Doctoral Canada Graduate Scholarship, National Sciences and Engineering Research Council (NSERC), 2013-2016
- McGill Engineering Doctoral Award, McGill University, 2011-2014
- Master's Canada Graduate Scholarship, NSERC, 2011-2012
- British Society Medal – Top student in chemical engineering, McGill University, 2011
- Society of Chemical Industry Merit Award, Society of Chemical Industry, 2011
- Dean's Honour List, 2011
- Order of Engineers of Quebec (OIQ) Merit Award – 2nd place, OIQ, 2011
- NSERC Undergraduate Student Research Award, 2009 & 2010

(c) *Awards for Service (indicate name of award, awarding organizations, date)*

(d) *Other Awards*

14. **OTHER RELEVANT INFORMATION** (Maximum One Page)

THE UNIVERSITY OF BRITISH COLUMBIA
Publications Record

SURNAME: Verrett

FIRST NAME: Jonathan

Initials: 

MIDDLE NAME(S): Douglas

Date: 15/09/2017

Entries listed below are in reverse chronological order by topic area. RJT – Refereed Journal Publication in a Technical Field, RPE – Refereed Proceedings Paper in Educational Field, RAE – Refereed Proceedings Abstract in Educational Field, RPT – Refereed Proceedings Paper in Technical Field, RAT – Refereed Proceedings Abstract in Technical Field

Key to my contribution:

First Author – typically conceived of and designed the experiment, performed the majority of the experiments in the manuscript and wrote the first draft.

Contributing Author – typically helped with experimental design, completed some experiments and edited the draft manuscript.

Senior Author (last listed) – typically conceived the experimental approach, supervised the work and the writing of the manuscript, and acted as corresponding author for the paper.

The above contribution key applies to all works except RPE4 in which all authors were equal contributors and collaborators and names are listed alphabetically.

1. REFEREED PUBLICATIONS

(a) *Journals*

Technical

- RJT1. **J Verrett.**, P Servio (2016). Reaction rate constant of CO₂—tetra-n-butylammounium bromide semi-clathrate formation. *Canadian Journal of Chemical Engineering*, 94(11), 2138-2144.
- RJT2. D Posteraro, **J Verrett**, M Maric, P Servio (2016) The effect of high driving force on the methane hydrate-polyvinylpyrrolidone system. *Journal of Natural Gas Science and Engineering*, 34, 1-5.
- RJT3. H Hayama, M Mitarai, H Mori, **J Verrett**, P Servio, R Ohmura (2016) Surfactant effects on crystal growth dynamics and crystal morphology of methane hydrate formed at gas/liquid interface. *Crystal Growth & Design*, 16(10), 6084-6088.
- RJT4. **J Verrett**, JS Renault-Crispo, P Servio (2015). Phase equilibria, solubility and modeling study of CO₂/CH₄+tetra-n-butylammonium bromide aqueous semi-clathrate systems. *Fluid Phase Equilibria*, 388, 160-168.
- RJT5. D Posteraro., **J Verrett**, M Maric, P Servio (2015). New insights into the effect of polyvinylpyrrolidone (PVP) concentration on methane hydrate growth. 1. Growth rate. *Chemical Engineering Science*, 126, 99-105.
- RJT6. Z Wei., EK Kowalska, **J Verrett**, C Colbeau-Justin, H Remita, B Ohtani. (2015). Morphology-dependent photocatalytic activity of octahedral anatase particles prepared by ultrasonication–hydrothermal reaction of titanates. *Nanoscale*, 7, 12392-12404.
- RJT7. R Jitrwung, **J Verrett**, V Yargeau (2013). Optimization of selected salts concentration for improved biohydrogen production from biodiesel-based glycerol using *Enterobacter aerogenes*. *Renewable Energy*, 50(0), 222-226

- RJT8. **J Verrett**, P Servio (2012). Evaluating surfactants and their effect on methane mole fraction during hydrate growth. *Industrial and Engineering Chemistry Research*, 51(40), 13144-13149.
- RJT9. **J Verrett**, D Posteraro, P Servio (2012). Surfactant effects on methane solubility and mole fraction during hydrate growth. *Chemical Engineering Science*, 84, 80-84.

(b) *Conference Proceedings*

Educational – full papers

- RPE1. **J Verrett** (2017). OpenChemE: Open Educational Resources for Material and Energy Balances. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2017), Toronto, Canada*.
- RPE2. AG d'Entremont, H Gustafson, **J Verrett**, KA Lyon, K Greer, A Ali. (2017) Gendered Words in US Engineering Recruitment Documents. *Final paper submitted for the American Society for Engineering Education Annual Conference 2017, Columbus, OH*.
- RPE3. **J Verrett**, AM Kietzig, M Orjuela-Laverde (2015). I flipped my tutorials: A case study of implementing active teaching strategies in Engineering. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2015), Hamilton, Canada*.
- RPE4. S Alajek, A Ham, M Heather, **J Verrett** (2013). Blurring the line between for-credit curricular and not-for-credit extracurricular engineering learning environments. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2013), Montreal, Canada*.

Educational – abstracts

- RAE1. **J Verrett** (2013). The Role of Peer-to-Peer Learning in Improving Pedagogical Skills of Teaching Assistants. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2013), Montreal, Canada*.

Technical – full paper

- RPT1. **J Verrett**, D Posteraro, J Ivall, S Brennan, P Servio (2014). Understanding the effect of kinetic additives on gas hydrate growth. *Proceedings of the 8th International Conference on Gas Hydrates (ICGH8-2014), Beijing, China*.

Technical – abstracts

- RAT1. **J Verrett**, P Servio (2015). Kinetics of carbon dioxide capture using tetrabutylammonium bromide semi-clathrates. *Proceedings of the 67th Canadian Chemical Engineering Conference (CShE2017), Edmonton, Canada*.

(c) *Other*

2. NON-REFEREED PUBLICATIONS

(a) *Journals*

(b) *Conference Proceedings*

(c) *Other*

3. **BOOKS**

(a) *Authored*

(b) *Edited*

(c) *Chapters*

4. **SPECIAL COPYRIGHTS**

5. **ARTISTIC WORKS, PERFORMANCES, DESIGNS**

6. **OTHER WORKS**

7. **WORK SUBMITTED** (including publisher and date of submission)

Educational – abstracts

Said Zaid-Alkailani, V Chiew, S Lim, J Lo, **J Verrett** (2017). Flipping Material and Energy Balances using Team-Based Learning. *Proceedings of the 65th Canadian Chemical Engineering Conference (CSCHE2015), Calgary, Canada.*

8. **WORK IN PROGRESS** (including degree of completion)