THE UNIVERSITY OF BRITISH COLUMBIA
Curriculum Vitae for Faculty Members

Date: 22/10/2019 **Initials**: JV

1. SURNAME: Verrett **FIRST NAME**: Jonathan
MIDDLE NAME(S): Douglas

2. DEPARTMENT/SCHOOL: Department of Chemical and Biological Engineering

3. FACULTY: Applied Science

4. PRESENT RANK: Instructor I **SINCE**: 01/08/2016

5. POST-SECONDARY EDUCATION

University or Institution	Degree	Subject Area	Dates
McGill University	PhD	Chemical Engineering	05/2011-05/2016
McGill University	B.Eng.	Chemical Engineering	09/2007-05/2011

Special Professional Qualifications

- Professional Engineering (P.Eng.) with Engineers and Geoscientists of British Columbia (EGBC) since August 2018

Continuing Education / Training

- Summer School for Chemical Engineering Faculty, American Society for Engineering Education (ASEE), In-person workshop to help new faculty excel as teachers and scholars, 5 days, July 29- August 3, 2017
- Facilitator Development Workshop, Instructional Skills Workshop International Advisory Committee, In-person workshop training facilitators for Instructional Skills Workshops (ISW), 40 hours, April 24-28, 2017

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

One of my main areas of focus is design education, which is an essential component of engineering practice. Design in the programs offered by the Chemical and Biological Engineering department (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 design skills, the problems they tackle must generally 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. As with much skill development, design is rarely done in isolation, but touches on many of the other professional skills engineers are expected to develop in areas such as communication, teamwork, project management and many others. The department has recently made engineering design experiences a focus of curriculum renewal and I touch more on this renewal in Section 9 of this CV. Within my teaching activities, a primary focus in many of my courses is ensuring students understand connections between courses in the curriculum in order to better prepare them for design not only in the 4th year design course, but their work beyond their degree.

In order to ensure students see these connections I have sought out opportunities to understand design instruction as it currently exists throughout all years of the two programs CHBE offers. I have taught in the introduction to engineering courses (APSC 100/101), which introduces all first year engineers at UBC to engineering design. For most students this will be their first course focused on engineering. Building on this, in the second year of study, students in CHBE programs, as well as integrated engineering (IGEN) learn to analyze industrial chemical and biological processes in a course focused on material and energy balances (CHBE 241). This is a foundational course in our discipline and I have strived to improve this course when teaching it from 2016W to 2018W. Through a Teaching and Learning Enhancement Fund Grant, I adapted and created open source content in order to better support student learning in CHBE 241. More details on this can be found in my teaching dossier. In the 3rd year of our program, students dig deeper into the individual units making up a plant. Some of this learning occurs in laboratory settings, such as in Process and Environmental Engineering Laboratory (CHBE 362), where students operate and characterize process equipment. In these laboratory courses, students also improve their communication and writing skills and I am broadening the lab experiences to include more open-ended design experiences, specifically with the heat exchanger portion of the labs. In their third year, students are exposed to computer process simulation, which allows them to rapidly design and cost equipment. In computer flowsheeting (CHBE 376), which I have taught for the past two years, students work to develop a simulation of a chemical process of their choice. Finally, in order to understand how students apply their design knowledge, I am part of the team of instructors delivering the 4th year process and product design course (CHBE 453/454). 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. I am accomplishing this by developing and integrating design activities into courses I teach such as CHBE 220 and CHBE 376. More information on these developments can be found in my teaching dossier.

Outside of the core courses discussed above, which all students take in our discipline, I have sought to disseminate my engineering knowledge more broadly. Notably, I am part of a team teaching engineering for non-engineers (APSC 366), a course for students in disciplines such as arts or commerce to be introduced to engineering principles. I have also contributed through guest lectures in courses such as CHBE 483: Energy Engineering and FNH 309: Food Process Science.

(b) Courses Taught at UBC

Session	Course Number	Total Scheduled Hours	Class Size	Total Hours Taught per Course			
				Lectures	Tutorials	Labs	Other
2019W2	APSC 101 – 202	25 Lecture 24 Studio	199	7	0	0	0
2019W2	APSC 101 - 204	25 Lecture 24 Studio	189	7	0	0	0
2019W2	APSC 366	39 Lecture	60	9	0	0	0
2019W2	CHBE 376	39 Lecture 12 Tutorial	119	39	12	0	0
2019W1 &W2	CHBE 453-454	26 Lecture 104 Advising	123	2	0	0	104
2019W1	APSC 100 - 102	25 Lecture 24 Studio	198	5	0	0	0
2019W1	CHBE 220	39 Lecture 24 Tutorial	115	39	24	0	0
2019W2	APSC 101 – 202	25 Lecture 24 Studio	199	7	0	0	0
2018W2	APSC 101 – 202	25 Lecture 24 Studio	149	7	0	0	0
2018W2	APSC 101 - 204	25 Lecture 24 Studio	182	7	0	0	0
2018W2	APSC 366	39 Lecture	48	9	0	0	0
2018W2	CHBE 376	39 Lecture 12 Tutorial	129	39	12	0	0
2018W1 &W2	CHBE 453-454	26 Lecture 104 Advising	106	0	0	0	104*
2018W1	APSC 100 - 102	25 Lecture 24 Studio	202	4	0	0	0
2018W1	APSC 100 - 103	25 Lecture 24 Studio	180	4	0	0	0
2018W1	CHBE 241	39 Lecture 12 Tutorial	178	39	12	0	0
2018W1	CHBE 243	13 Lecture 12 Tutorial	117	13	12	0	0

2018W1	CHBE 362 - 101	2 Lecture 10 Dry Lab 18 Wet Lab	69	2	10	18	0
2018W1	CHBE 362 - 102	2 Lecture 10 Dry Lab 18 Wet Lab	67	2	10	18	0
2017W2	APSC 366	39 Lecture	49	9	0	0	0
2017W2	CHBE 376	39 Lecture 12 Tutorial	128	39	12	0	0
2017W1	CHBE 241	39 Lecture 12 Tutorial	190	39	12	0	0
2017W1	CHBE 362 - 101	2 Lecture 10 Dry Lab 18 Wet Lab	64	2	10	18	0
2017W1	CHBE 362 - 102	2 Lecture 10 Dry Lab 18 Wet Lab	48	2	10	18	0
2016W1	CHBE 241	39 Lecture 12 Tutorial	193	39	12	0	0

*For CHBE 453/454 – this 104 hours is used for meeting with design groups twice per week.

Brief Descriptions of the courses and my activities:

APSC 100 – Introduction to Engineering I

- Course Description: An introduction to the engineering profession including: roles and responsibilities of the engineer, the engineering disciplines, sustainability, an introduction to the engineering design process, introduction and application of the relevant foundational scientific principles, prototyping, engineering graphics, technical communication, and engineering ethics.
- I am part of the teaching team of along with a variety of other faculty members across engineering disciplines. I am responsible to teach classes on focusing on sustainability, design and decision-making as well as helping to ensure alignment with the case study complementing these. I also assist with the creation and evaluation of the midterm and final exams.

APSC 101 – Introduction to Engineering II

- Course Description: An introduction to the engineering profession including: the engineering design process, sustainability, prototype testing, introduction and application of the relevant foundational scientific principles, team functioning, engineering graphics, and technical communication.
- I am part of the teaching team of along with a variety of other faculty members across engineering disciplines. I am responsible to teach classes on focusing on sustainability, design and decision-making as well as helping to ensure alignment with the case study complementing these. I also assist with the creation and evaluation of the midterm and final exams.

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 co-instruct the course with four other faculty members from Mechanical (2 people), Electrical and Civil Engineering and am responsible to teach a 3-week module on Chemical and Biological Engineering, as well as my module assessments and final project guidance and assessment.

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 243 – Introduction to Chemical and Biological Engineering Process and Technology

- Course Description: Processes used in chemical and biological industries, which emphasize underlying physical, chemical, and biological principles.
- I am 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 one other instructor, students work in teams of 4 to complete laboratory exercises, all work is split roughly evenly with my co-instructor and I evaluate student pre-lab preparedness, lab reports, oral presentations and teamwork.

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 am the sole instructor responsible for the delivery of the course.

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

- Course Description: 8-month project-based course, integrating chemical (and biological) engineering concepts with economics, life cycle analysis and health and safety considerations in the design of major chemical processes. CHBE 454 is taken by students in the Chemical Engineering program and CHBE 453 by students in the Chemical and Biological Engineering program.
- I co-instruct this course with four other instructors and am responsible for advising two groups of seven or eight students throughout the term as they work on their project. I meet with these students twice per week for roughly 45 minutes with each team. As part of the teaching team I assist in assessing projects at the end of both terms including interviews with students, evaluating presentations, design report and progress reports.

(c) Students Supervised

Students supervised in Teaching Projects

I have supervised students conducting teaching development and scholarship of teaching and learning (SoTL) projects. A more detailed description of these projects can be found in my Teaching Dossier.

Graduate Students

- Karl Zimmerman – Faculty Associates project, *design integration focusing on developing and assessing design activities in CHBE 243*, 40 hours, September 2018 – August 2019
- 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
- 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

Undergraduate Students

- Matheus Cassol – Work-Learn International undergraduate student research award (USRA), *Effective design instruction and assessment in chemical & biological engineering programs*, 560 hours, May-August 2019.
- Thomas Oldreive – Co-op student, *CHBE Undergraduate Program Evaluation and Renewal (UPER)*, 560 hours (50% co-supervised with Dr. Louise Creagh), May-August 2019.
- Said Zaid-Alkailani – OpenChemE TLEF project, *curating an online openly available textbook*, 300 hours, July 2017-March 2018
- 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

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

- Mean student evaluation scores on a 5 point scale* are available in the table below for all courses I have taught thus far where the data is available. Full student evaluations with student comments as well as specific reflections, planned improvements and actions taken can be found in my teaching dossier. Note that in 2018W1 UBC moved to using interpolated means rather than means for scoring. Numbers from 2018W1 onwards contain this interpolated mean and an extra decimal place is also indicated with this new system.

Course	***Year***	***Response Rate***	*The instructor made it clear what students were expected to learn*	*The instructor communicated the subject matter effectively.*	*The instructor helped inspire interest in learning the subject matter*	*Overall, evaluation of student learning (through exams, essays, presentations, etc.) was fair.*	*The instructor showed concern for student learning.*	*Overall, the instructor was an effective teacher.*

CHBE 241	*2018 W1*	*154/179 (86%)*	*4.42*	*4.20*	*3.86*	*4.35*	*4.44*	*4.29*
CHBE 241	*2017 W1*	*120/190 (63%)*	*4.2*	*3.8*	*3.6*	*3.8*	*4.6*	*4.1*
CHBE 241	*2016 W1*	*120/193 (62%)*	*4.2*	*3.8*	*3.7*	*3.7*	*4.6*	*4.0*
CHBE 243	*2018 W1*	*65/117 (56%)*	*3.74*	*3.85*	*4.05*	*3.76*	*4.06*	*4.11*
CHBE 362 – 101	*2018 W1*	*26/69 (38%)*	*4.29*	*4.17*	*4.27*	*4.06*	*4.50*	*4.50*
CHBE 362 – 102	*2018 W1*	*24/67 (36%)*	*4.14*	*4.14*	*4.14*	*4.59*	*4.50*	*4.30*
CHBE 362 – 101	*2017 W1*	*24/64 (38%)*	*4.0*	*4.1*	*3.9*	*3.8*	*4.3*	*4.2*
CHBE 362 – 102	*2017 W1*	*18/48 (38%)*	*4.2*	*4.4*	*4.1*	*4.1*	*4.7*	*4.6*
CHBE 376	*2018 W2*	*70/129 (54%)*	*4.94*	*4.93*	*4.81*	*4.82*	*4.89*	*4.94*
CHBE 376	*2017 W2*	*65/128 (51%)*	*4.6*	*4.6*	*4.4*	*4.4*	*4.7*	*4.7*
CHBE 453/454	*2018 W2*	*28/106 (26%)*	*3.73*	*3.75*	*3.83*	*4.09*	*3.91*	*3.85*
APSC 101 – 202	*2018 W2*	*43/149 (29%)*	*3.95*	*4.04*	*3.61*	*4.04*	*3.94*	*3.93*
APSC 101 - 204	*2018 W2*	*46/183 (25%)*	*4.00*	*4.07*	*3.68*	*3.89*	*3.82*	*3.88*
APSC 100 - 102	*2018 W1*	*116/202 (57%)*	*3.99*	*3.93*	*3.54*	*3.95*	*3.59*	*3.76*
APSC 100 - 103	*2018 W1*	*75/180 (42%)*	*4.05*	*3.99*	*3.54*	*3.83*	*3.68*	*3.91*
APSC 366	*2018 W2*	*15/48 (31%)*	*4.31*	*4.56*	*4.56*	*4.56*	*4.22*	*4.44*
APSC 366	*2017 W2*	*13/49 (26%)*	*4.1*	*4.2*	*4.0*	*3.8*	*4.3*	*4.3*

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

(e) Continuing Education Activities

- Summer Institute: Effective Lesson Planning, UBC CTLT, in-person workshop introducing lesson planning basics. Co-facilitated with Dr. Matthew Coles, 14 participants, 2 hour, August 21, 2019
- Introduction to and Using Open Educational Resources (OER): Part A, Canadian Engineering Education Association (CEEA) 2019 Annual Conference, in-person workshop introducing how to find and use OER. Co-facilitated with Dr. Grant McSorley and Dr. Deena Salem, 15 participants, 1.5 hours, June 9, 2019.
- WeBWorK for Beginners part I: Using WeBWorK, Canadian Engineering Education Association (CEEA) 2018 Annual Conference, in-person workshop introducing the open source online homework platform WeBWorK. Co-facilitated with Dr. Agnes d'Entremont, Dr. Negar Harandi, Dr. Luis Linares, 8 participants, 1.5 hours, June 3, 2018.
- WeBWorK for Beginners part II: Developing in WeBWorK for the Open Problem Library, CEEA 2018 Annual Conference, in-person workshop focusing on problem development

in the WeBWorK homework platform. Co-facilitated with Dr. Agnes d'Entremont, Dr. Negar Harandi, Dr. Luis Linares, 9 participants, 1.5 hours, June 3, 2018.

- WeBWorK for Beginners! Using and Developing for the Open Problem Library, British Columbia Institute of Technology (BCIT), in-person workshop introducing the open source online homework platform WeBWorK. Co-facilitated with Dr. Agnes d'Entremont, Dr. Negar Harandi, Dr. Luis Linares, 10 participants, 2 hours, Feb 21, 2018. Also run at UBC with Dr. Harandi, 1 participant, 1.5 hours, May 2, 2018
- Teaching with Technology Showcase, UBC CTLT, in-person showcase hosted by the Provost for selected educational technology projects, I presented on my TLEF used to develop open educational resources in CHBE 241, 2 hours, Dec 7, 2017
- Winter Institute: WeBWorK for Beginners! Using and Developing for the Open Problem Library, UBC CTLT, in-person workshop introducing the open source online homework platform WeBWorK. Co-facilitated with Dr. Agnes d'Entremont, Dr. Negar Harandi, Dr. Luis Linares, Dr. Patrick Walls, 21 participants, 2 hours, Dec 4, 2017
- 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, 15 participants, 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, 20 participants, 1.5 hour, August 28, 2017
- Faculty Instructional Skills Workshop (ISW), 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 and Dr. Judy Chan, 11 faculty, 24 hours, August 22-24, 2017. Co-facilitated with Susan Hampton, 11 faculty, 24 hours, August 14-16, 2018. Co-facilitated with Susan Hampton and Lucas Wright, 17 faculty, 24 hours, August 13-15, 2019.
- CHBE Departmental Instructional Skills Workshop, UBC CHBE, 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, 2017; 4 students, 24 hours, May 23-25, 2018.
- Vancouver Summer Program Training, UBC CHBE, 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), 11 students, 4 hours, June 13, 2017; 8 students, 4 hours, April 30, 2018, 6 students, 4 hours, April 30, 2018.
- 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

Continuing Education attended related to teaching (> 3 hours):

- Course Design Intensive Workshop, CTLT, In-person training on course design, 24 hours, December 10-14, 2018
- Safety and Chemical Engineering Education Faculty Workshop, American Institute of Chemical Engineers (AIChE), in-person training on process safety and curricular integration at Chevron Energy Technology Company in Richmond, CA, 24 hours, Aug 26-29, 2018
- Team-Based Learning Course Design Institute, Centre for Instructional Support, UBC Faculty of Applied Science, In-person workshop on team-based learning (TBL), 20 hours, May 16-18, 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
- 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
- Instructional Skills Workshop (ISW), CTLT, In-person training on how to analyze and improve pedagogy and lesson planning, 24 hours, August 16-18, 2016

Continuing education attended related to teaching (≤ 3 hours):

- Tension and Risk in Open Scholarship: A Conversation, Open Access Week Vancouver, in-person workshop focusing on new developments in open scholarship, 3 hours, October 26, 2017
- 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
- 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
- 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

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 term as well as student poster presentations on design day on April 7, 2017. In 2017W I was involved in student assessment through individual interviews at the end of the second term as well as final project student poster presentations on April 3, 2018. In 2018W I was added to the teaching team as I then received my professional engineering license which is required to teach a design focused-course.

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, 2 hours (each session), January 9 & 23 and November 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, Feb 7, 2018 and Feb 21, 2019. 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, guest lecturing and providing feedback on student work as listed below:

- Evaluator, CHBE 262 – Chemical Engineering and Applied Chemistry Laboratory student poster presentations, 2 hours each day, March 31, 2017, March 23 & 26, 2018

and March 25 & 29 2019. 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, led student tours to various facilities. 3 hours, February 10, 2017, False Creek Neighborhood Energy Utility and 4 hours, February 12, 2018, BC Sugar.
- Evaluator, CHBE 491/493/495 - Undergraduate Thesis Proposal, 3 hours, November 28, 2016 and 2 hours, November 27, 2017. I evaluated and gave students feedback on their undergraduate thesis proposals.
- 3rd Year Local Industrial Field Trip Coordinator. September 26 & 28, 2016, 10 hours, I coordinated travel and led students on industrial tours of the CertainTeed Drywall plant, Seymour-Capilano Water Treatment plant and Central City Brewery. September 24 & 25, 2018, 10 hours, I coordinated travel and led students on industrial tours of the Fraser Valley Biogas plant, Vitalus Milk Processing Facility, Crow's Nest Distillery ans Swisswater coffee plants.
- Guest lecture, CHBE 483 – Energy Engineering, "energy and environmental aspects of clathrate (gas) hydrates" 1 hour each day on October 5, 2016, October 6, 2017 and October 5, 2018.
- Guest lecture, APSC 100 – Introduction to Engineering I, "Introduction to Chemical and Biological Engineering", three 20 minute presentations, one on September 27, 2017 and two on September 29, 2017.
- Guest lecture, CHBE 487 – Interfacial Phenomena, feedback session on course projects, .1.5 hours total, February 9, 2017.
- Guest lecture, FNH 309 – Food Process Science, "food dehydration technologies" and "intermediate moisture foods", 3 hours total, February 1 & 3, 2017.

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 2016W2 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 2016W1 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

My educational leadership activities have focused on collaborations in three main areas: improving design experiences in the CHBE program, creating and supporting educator training opportunities and collaborating on educational innovation.

Integrating CHBE design experiences

In order to improve design experiences in the CHBE program I have undertaken a number of activities detailed in Section 8 – Teaching of this CV as well as in my teaching dossier. Furthermore I have extended this impact beyond my own classroom by working with other faculty members on design activity development and integration. One example of this is the Teaching and Learning Enhancement (TLEF) grant received by Dr. Gopaluni, Dr. Yadav and myself in order to integrate a variety of experiential learning tools into two 3rd year term 2 courses. These course are CHBE 355 – Kinetics and Reactor Design and CHBE 356 – Process Dynamics and Control. Through this collaboration we have developed software tutorials to introduce students to numerical methods using Python in order to model the systems that they are learning about in the classroom. The use of this software culminates in a newly developed design project in both courses. Some of the tools we developed have been so successful that they have also been adopted by students in other classes to learn Python.

Educator Training

One of my focuses has been to support educator training opportunities in order to ensure effective teaching methods are being disseminated and practiced. An example of this is the development of teaching training program in conjunction with our department's Vancouver Summer Program (VSP) offering. In this program graduate students and post-doctoral fellows are offered a paid opportunity to teach a series of 3 three-hour lectures in the program. Prior to this the trainees attend a four-hour training session, followed by multiple individual support sessions to help give them feedback on their class plans. As part of the program, I have previously facilitated an optional Instructional Skills Workshop (ISW) for the participants. I have also been active in facilitating ISWs for faculty at UBC's CTLT. In addition to this I am active in delivering workshops related to open educational tools, most notably WeBWorK, an online homework platform.

Collaboration on educational innovation

In order to have impactful educational innovations I have collaborated on a number of high impact initiatives within my own department as well with faculty in other departments at UBC and across Canada. Working closely with Dr. Louise Creagh and our department's curriculum committee we created a successful proposal for a special TLEF call for Undergraduate Program Evaluation and Renewal Projects. Dr. Creagh and I are now responsible for co-leading the work of this project to revamp the department's program evaluation procedures in order to ensure continuous improvement for both of the undergraduate programs offered by the department. I have also worked closely with Dr. Agnes d'Entremont (MECH) and Dr. Negar Harandi (ELEC) to successfully implement a TLEF expanding the WeBWorK online homework system in second-year engineering. With this expansion every second year student is impacted by this homework system and we are making over 1600 new problems available in five engineering subjects. This will increase the WeBWorK Open Problem Library's engineering content seven-fold from the original 260 questions in three subjects.

(b) Curriculum development/renewal

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 first year of the program, in summer of 2017 was a success attracting 45 students. The 2016 W program comprised of one package (Package A) of two courses, with the courses being Introduction to Biological Engineering and Introduction to Chemical Engineering, which are each the equivalent of a first-year 3-credit course. 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 have extended VSP offerings for the summer 2018 by continuing to offer the same package as well as adding a second course package (Package B) focusing on more advanced topics explored through the courses: The Science and Engineering of Coffee Production and The Science and Engineering of Beer and Wine Production. In the summer of 2018, 65 students participated in Package A and 26 participated in Package B. We are further expanding the program to include a third package focusing on computer-aided design (Package C). Materials I have developed for a process modelling course at UBC will be used for part of Package C.

(c) Pedagogical innovation

WeBWorK Open Online Homework Development
Working with Drs. Agnes d'Entremont, Negar Harandi, Juan Abello and Luis Linares we have developed 835 new online homework problems in WeBWorK. We have also developed scripts for re-coding over 800 problems from other systems (such as blackboard) so that these can be ported over to WeBWorK. These questions have been deployed in common second-year engineering courses in CHBE, CIVL, ELEC and MECH impacting all second-year students in engineering programs in APSC at UBC-V (~800 students/year). Following testing these problems are being uploaded to the Open Problem Library (OPL) so they are freely accessible to be used and modified. We were also invited to take part in a WeBWorK development working meeting in Charlottesville Virginia along from June 27-July 1, 2018. Drs. d'Entremont, Abello and myself were able to attend and developed 7 taxonomies for engineering subjects (none were previously present) such that problems can be categorized and shared on the OPL. Further information on WeBWorK development can be found in my teaching dossier.

Chemical Engineering Practice - CHBE 241: Material and Energy Balance & CHBE 201: Technical Communications
Working with Mr. Michael Schoen and Ms. Estella Qi I have developed case studies and midterm and final exam questions for CHBE 201 that have been implemented in the 2017W1 CHBE 201 course. These case studies focus on chemical plant material balances, process equipment selection, economic analysis and safety analysis. We plan to continue to develop case studies and exam questions to strengthen the link between communications and technical content in our program.

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 for implementation in 2017W. 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

Listed below are my teaching and learning grants with an estimate of the relative percentage of contribution if these are shared with other investigators.

Granting Agency	**Subject**	**$ Per Year**	**Year**	**Principal Investigator**	**Co-Investigator(s)**
UBC Undergraduate Program Evaluation and Renewal Teaching and Learning Enhancement Fund (TLEF)	Evaluating student outcomes in Chemical and Biological Engineering to ensure impactful program redesign	$69,976 (2019) $59,726 (2020 – TBD*) $47,438 (2021 – TBD*)	2019 - 2021	Dr. Peter Englezos (Dept. Head)	Dr Louise Creagh, **Dr. Jonathan Verrett (40%),** Dr. Charles Haynes, Dr. Dusko Posarac, Dr. Bhushan Gopaluni, Dr. Gabriel Potvin, Mr. Jim Sibley
UBC Institute for Scholarship of Teaching and Learning (ISoTL)	Student usage patterns in WeBWorK in Second-Year Engineering	$600 & 70 hours GRA support	2019	Dr. Agnes d'Entremont	Dr. Negar M. Harandi, Dr. Juan Abelló, **Dr. Jonathan Verrett (25%)**,
UBC Teaching and Learning Enhancement Fund (TLEF)	Math Doesn't Need to Be Hard: Integrating Experiential Learning and Interactive Online Resources for Chemical Engineering	$33,545 (2018) $12,785 (2019) $3,651 (2020 – TBD*)	2018 - 2020	Dr. Bhushan Gopaluni	Dr Vikramaditya Yadav, **Dr. Jonathan Verrett (50%)**
UBC Teaching and Learning Enhancement Fund (TLEF)	Flash Feedback for Second-Year Engineering (FF2E): Personalized Experiential Learning with Instant Feedback Through Shared WeBWorK Resources	$38,878 (2018) $11,092 (2019)	2018 & 2019	Dr. Agnes d'Entremont	Dr. Negar M. Harandi, Mr. Jim Sibley, **Dr. Jonathan Verrett (25%)**, Dr. Patrick Walls
BC Campus - Open Education	Open Education Advocacy and Research Fellow	$2,000	2018	**Dr. Jonathan Verrett**	

BC Campus - Open Education	Open Education Resources Grant: WeBWorK online Homework Problems for Mechanical and Chemical Engineering Courses	$7,500	2018	**Dr. Jonathan Verrett (40%)**	Dr. Agnes d'Entremont, Dr. Patrick Walls, Dr. Peter Cripton, Mr. Jim Sibley
UBC CTLT Faculty Associate Program	Integrating and measuring the effect of design in the 2nd and 3rd year of CHBE curriculum.	$10,000 (2017), $10,000 (2018)	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 (supervisor)**

TBD* - Indicates future funding to be awarded based on yearly progress reports

(f) Formal educational leadership responsibilities

Curriculum Design Integration & Faculty Associate Program
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 have brought resources and expertise to the department to assist with this process by being selected to be part of the Faculty Associate Program with CTLT. Progress has been made following the first year in implementing design projects in CHBE 376 Computer Flowsheeting, as well as a successful TLEF grant to help implement design projects in CHBE 355: Kinetics and Reactor Design, in collaboration with Dr. Vikramaditya Yadav and Dr. Bhushan Gopaluni. In 2018W we have continued to refine design projects in the above courses as well as expand implementation as part of the CHBE 362: Process and Environmental Engineering Laboratory as well as CHBE 243: Introduction to Chemical and Biological Engineering Process and Technology .

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 in my Teaching Dossier.

(g) Innovation in the use of learning technology

Online homework - CHBE 241: Material and Energy Balance and CHBE 251 Transport Phenomena I

In 2016W, I used the online learning management system, Connect, to integrate weekly online quizzes into my course. These were used to understand student progress in the course as well as points of confusion. I used 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. I have expanded this project by partnering with Dr. Agnes d'Entremont (MECH), Dr. Negar M. Harandi (ELEC) and others to continue to develop WeBWorK usage in second-year engineering courses. This resulted in a successful TLEF grant which will implement WeBWorK in a variety of CHBE, CIVL, ELEC and MECH courses in 2018W and 2019W. I also invited and took part in the WeBWorK Development meeting funded by the National Science Foundation (NSF) from June 28-July 1 at the University of Virginia.

(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 these workshops are detailed in section 8g, February 2017 onwards.

10. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) Areas of special interest and accomplishments

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

- Invited Young Faculty Presenter (International): "Educational Innovation Using Open Educational Resources", Computer Aids in Chemical Engineering (CAChE) 50th Anniversary Conference, Breckenridge, Colorado (July 19-20, 2019)

(c) Other Presentations

(d) Other

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

- Logistics Chair, 2018 Canadian Engineering Education Association (CEEA) Annual Conference. Responsible for planning accommodations, venue, food and keynote

travel for conference with ~300 delegates held at UBC, ~ 200 hours, Sept 2017-June 2018.

11. SERVICE TO THE UNIVERSITY

(a) Areas of special interest and accomplishments

My service to the university has focused on supporting student experiences outside of the curriculum, particularly in design and laboratory work, and working to ensure that all students are thriving at the university.

My impact as a student advisor to a number of student initiatives is demonstrated through student teams' 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 in April 2017. This is the largest group of students ever attending from our department. These strong attendance numbers were present in subsequent years at regional competitions in Montana in 2018 (11 students) and Idaho in 2019 (16 students), where students also joined to present their research work.

I strongly believe that engineering should be welcoming to everyone including gender, racial and sexual minorities. In order to help advance diversity in the engineering profession I have completed positive space training and seek to make the university environment, and most especially my classroom, a welcoming space for everyone. 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 have also been keen to focus on student wellness and serve as my department's faculty wellness liaison, bringing resources around health and wellness to the attention of colleagues and students. In order to help members of the broader community understand the importance and impact of engineering on society, I also actively participate in outreach events such as Applied Science Open House, first year engineering information sessions as well as lead lab tours for first year students as well as visitors to the department.

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

Department:

- Member, Lab Committee, September 2017 – present
    - Reviewing lab procedures, safety, new lab development and equipment needs. 10 hours per year.
- Member, Curriculum Committee, September 2017-present
    - Preparation for accreditation visit in 2017. Roughly monthly meetings to review the curriculum for each year to see where and if changes are required. 20 hours per year.
- Member, CHBE Instructor Faculty Search Committee, May – June 2019
    - Reviewed 21 applications, assisted in conducted 5 skype interviews and 3 in-person interviews, 30 hours.
- Member, Merit and Performance Salary Adjustment (PSA) Committee, November 2017 & May 2019

    - Reviewed ~25 department members for merit and PSA over 2016-2017 and 2018-2019 review periods, 6 hours each time.
- Member, Accreditation Committee, September 2016-August 2017
    - Organized and reviewed accreditation documents to prepare for accreditation visit in November 2017, 30 hours.
- Faculty Advisor, UBC AIChE Chapter and Envision, 2017W – present academic year
    - Advise the newly created undergraduate Envision club, which unites design teams focusing on chemical and biological engineering applications. Support student travel and funding requests. Notable achievements were restructuring teams to received funding from the APSC professional activities fund (PAF). 5 hours per year.
- Faculty Advisor, CheBeer Project, 2016W- present academic year
    - Supervise use of room CHBE 103A and CHBE 326. Review and revise procedures for experimental safety. Support student travel and funding requests. Notable achievements by students include a workshop on the project at the American Institute of Chemical Engineers 2017 National Conference attracting over 100 participants. 5 hours per year.
- 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-present academic year
    - Co-supervise use of CHBE Lab 536 with Dr. Naoko Ellis. Responsible for safety of biodiesel reactor. 10 hours per year.
- Faculty Advisor, Engineers Without Borders, 2016W-present academic year
    - Advisor for CHBE assisting students with funding. 2 hours per year.
- Faculty Advisor, UBC ChemEcar, 2016W-present academic year
    - Supervise use of room 174. Review and revise lab procedures for experimental safety. Support student travel and funding requests accompanying students to regional conferences in Oregon (2017), Montana (2018) and Idaho (2019) as well as national conferences in San Francisco (2016) and Pittsburgh (2018). Notable achievements by students include qualifying and competing at the first ChemEcar competition held at the World Congress of Chemical Engineering in Barcelona Spain in October 2017. 10 hours per year.
- Faculty Advisor, UBC Thunderbikes, 2018W academic year
    - Advisor providing insight on space and funding, 2 hours.

Faculty:

- Member, Professional Association Fund (PAF) Funding Committee, 2019W academic year
- Member, Broad Based Admission (BBA) Committee, 2016W & 2017W academic year
    - Ranked roughly 180 student applications in 2016W (20 hours) and 90 in 2017W (10 hours).
- Member of delegation promoting student exchange ties with Technical University of Munich (TUM)

- Travelled to Munich for 1 week to meet with faculty and staff and discuss existing programs and methods of increasing student exchange between UBC and TUM, May7-11, 2018.

University:

- Member, UBC Premier Wesbrook Scholar's Selection Committee, December 2018
  - ranked roughly 100 applications for UBC's most prestigious scholarships with values up to $15,000, 20 hours.

(c) Other service, including dates

Department:

- Faculty Representative, CHBE First Year Info Session, represented CHBE and gave information about the program to first year engineering students, 2 hours, March 22, 2018, 2 hours, March 15, 2019
- Faculty Representative, APSC First Year Fair, represented CHBE and gave information about the program to first year engineering students, 3 hours on March 14, 2018 and 2 hours on March 15, 2019
- Host, Dr. Lisa Bullard visiting from North Carolina State University, coordinated scheduling for individual meetings, seminar and graduate teaching workshop, March 9, 2018
- Speaker, Beyond STEM Career Fair, Burnaby Central Secondary School, outreach for he CHBE department and UBC to secondary school students, ~100 participants, 3 hours, December 13, 2017
- 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
- Undergraduate Student Research Award (USRA) Review and Ranking, February, 2017
- Judge for CHBE research day student oral presentation competition, January 26, 2017

Faculty:

- Mentor, Shad Valley program at UBC, my role was meeting with a student team to guide them in their design process for developing a product as part of their program project, 4 meetings over 6 hours, July 2018
- Host and Lab Tour Guide, UBC Applied Science Open House and Future Leaders Breakfast, 7 hours, Nov 26, 2016, 9 hours, Nov 18, 2017, 9 hours, Nov 24, 2018

University:

- Adjudicator, Teaching as Research (TAR) grants, UBC Centre for the Integration of Research, Teaching and Learning (CIRTL), adjudication and feedback for 11 applicants, 5 hours, July 2018, adjudication and feedback for 5 applicants, 3 hours, July 2019.

- Co-chair, UBC Educational Leadership Network (ELN), August 2018-present
- Community and Membership Coordinator, UBC ELN (previously UBC Instructor Network), August 2016-August 2018
- Positive Space Resource Person, November 2016- present
- Panelist, CTLT external review on workshop sessions, November 28, 2016

Continuing Education related to service (> 3 hours):

- Occupational First Aid (OFA) level 1, in-person course and test on first aid, broadly applicable in the department but specifically for laboratory instruction, 8 hours, August 10, 2018
- Professional Practice Examination, EGBC, passed an in-person test required as part of the application for a professional engineering license, 4 hours, April 4, 2017
- Professional Engineering and Geoscience Practice in BC, EGBC, Online seminar providing guidance on legal and ethical issues for engineers in BC, required as part of the application for a professional engineering license, 6 hours, March 28, 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

Workshops attended related to service (≤ 3 hours):

- Biosafety Training, UBC Risk Management Services (RMS), Online and in-person training course required for handling biologically hazardous materials, 2.5 hours, January 24, 2018
- 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
- 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
- Engineering Design Team Safety Orientation, RMS, online workshop on safety training specific to engineering design teams, 0.5 hours, August 9, 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, Membership Committee, American Institute of Chemical Engineering Education Division, 2017-present.
- Member, Canadian Engineering Education Association, 2013-present
- Member, Society of Chemical Industry, 2011-2016
- Member, Canadian Society for Chemical Engineering, 2008-2017, 2019

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

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

- AIChE Student Awards Committee, evaluating 3 outstanding student chapter advisor nominations, 1 hour, July 2019.
- EGBC Scholarship Committee, evaluating 4 nomination for Frank Baumann Scholarship, 2 hours, Oct 2018, evaluating 26 nominations for entrance and transfer scholarships, 6 hours, August 2019.

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

(e) Editorships (list journal and dates)

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

Journals:

- Chemical Engineering Education,1 journal article, 2019.
- Journal of Natural Gas Science & Engineering, 1 journal article, 2016, to maintain my connection to research and incorporate this into my teaching.

Conferences:

- Canadian Engineering Education Association Annual Meeting, 2 abstracts, Toronto, 2017, 5 abstracts and 2 journal articles, Vancouver, 2018

(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), assisting with organizing national undergraduate student conference including safety checks for ChemEcar competition and judging undergraduate research posters, 4 hours, Nov 11-13, 2016, 8 hours, Oct 27-29, 2018
- AIChE, assisting with organizing regional undergraduate student conference including safety checks for ChemEcar competition and judging undergraduate research posters, 8 hours, April 21-23 2017, 8 hours, April 13-15 2018, 8 hours, April 26-28,2019.
- AIChE Student Design Competition judge evaluating 4 plant design entries (~80 pages each), 8 hours, Aug 2018, 8 hours, Aug 2017.

13. AWARDS AND DISTINCTIONS

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

While at UBC

- Teaching Award, UBC Department of Chemical and Biological Engineering Undergraduate Club, 2018W academic year
- 2nd Year Teaching Award, UBC Department of Chemical and Biological Engineering Undergraduate Club, 2016W academic year

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. <u>OTHER RELEVANT INFORMATION</u> (Maximum One Page)

THE UNIVERSITY OF BRITISH COLUMBIA
Publications Record

SURNAME: Verrett **FIRST NAME**: Jonathan **Initials**:
MIDDLE NAME(S): Douglas **Date**: **22/10/2019**

Entries listed below are in reverse chronological order by topic area. RJT – Refereed Journal Publication in a Technical Field (full peer review), RPE – Refereed Proceedings Paper in Educational Field (abstract peer reviewed, paper not reviewed), 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 RPE 1-4 and RAE 1 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. doi.org/10.1002/cjce.22612

RJT2. D Posteraro, **J Verrrett,** 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. doi.org/10.1016/j.jngse.2016.06.035

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. doi.org/10.1021/acs.cgd.6b01124

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. doi.org/10.1016/j.fluid.2014.12.045

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. doi.org/10.1016/j.ces.2014.12.009

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. doi.org/10.1039/C5NR02386F

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. doi.org/10.1016/j.renene.2012.06.049

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. doi.org/10.1021/ie301931m

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. doi.org/10.1016/j.ces.2012.08.009

(b) Conference Proceedings

Educational – full papers (the standard venue for engineering education contributions)

RPE1. A d'Entremont, N M Harandi, **J Verrett** (2019). Developing for and deploying WeBWorK across disciplines in second-year engineering. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2019), Ottawa, Canada.*

RPE2. G Co, Z Xu, G Sgarbi, S Cheng, Z Xu, A d'Entremont, J Abelló, N M Harandi, **J Verrett** (2019). Student submission patterns in online homework and relationships to learning outcomes: a pilot study. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2019), Ottawa, Canada.*

RPE3. M Marshall, L Wilkinson, V Yargeau, M Orjuela-Laverde, M Bloom, B Caron, L Meunier, G Zilberbrant, P Okrutny, **J Verrett,** M Shoen, E Qi, T Teslenko, K Miller, H Golpour (2019). Preparing Tomorrow's Engineer-Communicators: A Review of Models for Effective Communication Instruction. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2019), Ottawa, Canada.*

RPE4. A Maleki, C Piccolo, **J Verrett** (2018). Effect of a mini lesson on self-regulated learning on students' learning. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2018), Vancouver, Canada. doi.org/10.24908/pceea.v0i0.13023*

RPE5. J S Lee, **J Verrett** (2018). WeBWorK as an open online homework system in a second-year material and energy balances course. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2018), Vancouver, Canada. doi.org/10.24908/pceea.v0i0.13047*

RPE6. M Schoen, T Teslenko, E Qi and **J Verrett** (2018). Integrating Writing and Engineering Instruction to build a foundation for student success in their engineering disciplines. *Proceedings of the Canadian Engineering Education Association Annual Conference (CEEA 2018), Vancouver, Canada.*

RPE7. **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.* doi.org/10.24908/pceea.v0i0.7338

RPE8. AG d'Entremont, H Gustafson, **J Verrett**, KA Lyon, K Greer, A Ali. (2017) Gendered Words in US Engineering Recruitment Documents. *American Society for Engineering Education Annual Conference 2017 (ASEE 2017), Columbus, OH. https://peer.asee.org/28401*

RPE9. **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.* doi.org/10.24908/pceea.v0i0.5750

RPE10. 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.* doi.org/10.24908/pceea.v0i0.4800

Educational – abstracts

RAE1. A d'Entremont, **J Verrett** (2019). Implementing the WeBWorK open online homework system in second-year courses across a faculty of Engineering. *Cascadia Open Education Summit 2019, Vancouver, Canada.*

RAE2. **J Verrett** (2019). WeBWorK Online Homework in Material and Energy Balances. *The 87th Annual Pacific Northwest Section American Society for Engineering Education Conference (ASEE PNW 2019), Corvallis, OR.*

RAE3. S Zaid-Alkailani, V Chiew, S Lim, J Lo, **J Verrett** (2017). Flipping Material and Energy Balances using Team-Based Learning. *Proceedings of the 67th Canadian Chemical Engineering Conference (CSChE2017), Edmonton, Canada.*

RAE4. **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 65th Canadian Chemical Engineering Conference (CSChE2015), Calgary, 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)

WS1. A Dowling, F Boukavala, **J Verrett,** Z Ulissi, V Zavala (2020). Computational notebooks in chemical engineering curricula. *Chemical Engineering Education*. Submitted Oct 4, 2019.

WS2. M Cassol, J Verrett (2020). Evaluating a new second-year introduction to chemical engineering design course using concept mapping. *American Society for Engineering Education Annual Conference 2020 (ASEE 2020), Montreal, QC.*

8. WORK IN PROGRESS (including degree of completion)

WIP1. M Cassol, **J Verrett** (2020). Assessing evolution of discipline-based design knowledge in second-year chemical and biological engineering students. 40% complete, literature review and assessment exercise complete, assessment implementation in 2019W term 1, analysis and publication for summer 2020.

WIP2. L Creagh, **J Verrett** (2020). Undergraduate program renewal: Improving the continuous improvement process. 30% complete, literature review and improvement activities complete, analysis and publication for summer of 2020.