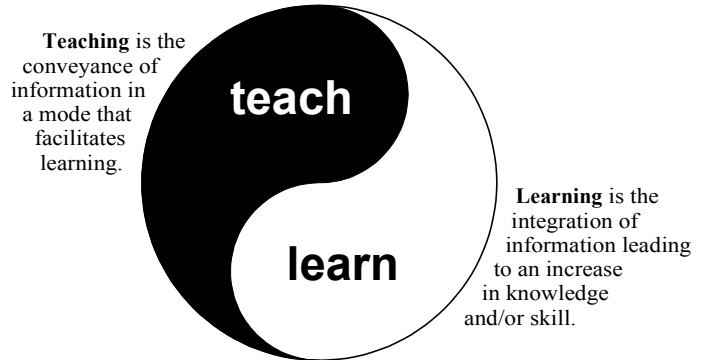


**INSTRUCTIONAL PHILOSOPHY**

*The more students engage in learning — reading, taking notes, solving problems, interacting with peers, designing and conducting experiments — the more they learn.*

I believe learning occurs when connections are made between existing knowledge and new information, leading to an integration of the new information and an increase in knowledge. **That is, I believe in the constructivist theory of learning.** Many of my beliefs on teaching and learning are consistent with the American Psychological Association report on learner-centered learning: *Learner centered psychological principles: a framework for school reform and redesign.*

During formal instruction, there is a symbiotic relationship between the instructor and students. My role as the instructor is to establish a safe instructional environment conducive to learning, facilitate learning by relating the material to the students’ existing knowledge, engage and focus students to learn the material, and teach at a level and pace to optimize student learning yet challenge the students. My role is *not* to tell students the answer, but to show them how to find the answer for themselves. For this to work, students must be prepared to learn, receptive to new ideas, willing to engage in classroom activities, and keep up with the course material outside of class.



In addition to formal instruction, learning occurs through independent study, peer groups, and hands-on activities (e.g., laboratory). These activities complement formal instruction and result in deep learning of the material.

At a meta-pedagogical level, the academic curriculum must build the students’ problem-solving skills and transform the student from being a dependent learner to being a self-directed learner. By the end of their post-secondary program, students should be self-directed and functioning high on Bloom’s Taxonomy.

**Blooms Taxonomy\***

		Cognitive process dimension					
		Remember	Understand	Apply	Analyze	Evaluate	Create
Knowledge dimension	metacognitive						<i>most challenging</i>
	procedural						
	conceptual						
	factual	<i>simplest</i>					

\*. Anderson, L. W.; Krathwohl, D. R. (Eds.). 2001. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

*My academic philosophy is to support and advocate for practices that serve the long-term best interests of students, faculty, the institution, and society. By providing students with the best possible education and best possible learning environment, graduates enter and succeed in the workforce. Their distinguished service to their employer and to society builds the institution's reputation and ensures its longevity.*

### **INSTRUCTIONAL EXPERIENCE AND PRACTICES**

My instructional practices are guided and evolve based on pedagogical literature, personal experience, and the experiences of my colleagues. As my experience and comfort increases, the amount of lecture in my classes has decreased and the amount of student engagement has increased. Reflecting on my current classroom, I spend approximately 30 – 50 % of the time engaged in lecture, 30 – 50 % in instructor-led activities, and 10 – 30 % in student-led activities. I transition between instructional modes regularly, creating an engaging, dynamic, and safe instructional environment. A personal goal is to further decrease the amount of lecture and increase the amount of student-led activities.

- Despite the term, my ‘lectures’ are not monologues. They are punctuated with questions to and from students and blended with numerous other instructional strategies.
- Some instructional strategies I commonly use include demonstrations, instructor-led problem solving, student-led problem solving, physical and computer models, samples, and videos. Discussion of real-world applications, career applications, and current events makes the information and chemistry relevant.
- By completing examples in class, students see how to solve problems, draw chemical structures, and how to manipulate mathematical and chemical formulae. They see how I critically consider the final answer to ensure there are no obvious calculation errors.

I created ‘Readiness Assessments’ based on the Alberta CHEM 20/30 curriculum. Students are encouraged to take the Assessments at the beginning of CHEM 101 and CHEM 102. The Assessment allows students to determine how much of high school chemistry they recall and to realize the expectations of first-year chemistry. Student feedback on this assessment has been positive and other instructors are now using similar assessments.

I incorporate numerous technologies in my classes: I use free chemistry software, such as *Orbitals* and *Avogadro*, and encourage students to use these programs to learn chemistry. The University of Alberta installed *Adobe Connect* (web conferencing software) in summer 2013; I pioneered the use of *Adobe Connect* for classroom video capture, in-class discussion via the chat module, and in-class polling via the polling module. The chat module allows reluctant students to participate in discussions and problem solving. The polling module is more convenient and more robust than iClickers. I am currently working with the Center for Teaching and Learning to streamline the use of *Adobe Connect* and educate other instructors on this technology.

This year, I integrated flipped instruction as another instructional strategy. I flipped the components of the course that built on material introduced in high school. This material was selected because students who recently completed high school chemistry find the instructional pace too slow while those who completed high school chemistry a few years ago find the pace too fast. Flipped instruction allows students to review and learn the foundational material at their own pace, while creating class time for higher-level learning activities.

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For many of the students in first-year chemistry, these are the last chemistry courses they will take. With this understanding, I endeavor to present concepts with as many real-world applications as possible. I want students to leave my class knowing and appreciating how chemistry affects their lives. Student feedback indicates that they appreciate the enthusiasm I bring to the classroom and appreciate my efforts to engage students in learning. When asked about the most interesting thing they learned in class, approximately half identify new concepts (often quantum, spectroscopy, or kinetics), and half identify the real-world examples (cooking, hot air and helium balloons, fluorescent bulbs, etc.).

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Outside of class, I encourage and facilitate students to develop study groups early in the term. I also encourage students to ask questions on a course discussion forum, and answer questions asked by other students. Students are aware that I monitor the forum to ensure the student answers are correct. Students regularly stop by my office with questions. I enjoy the one-on-one interaction and seeing the *eureka!* moment when a concept is understood. Students often ask about research opportunities, career opportunities, and information they found in the news or on the internet. I answer what I know and then direct students to people and resources that can further answer their questions. Often, the chemistry news items are discussed in class.

Outside of academia, society perceives that science has limited applicability and is beyond the comprehension of the average person. *I vehemently disagree.* Instilling in students the importance and everyday applicability of science is the first step to correcting this fallacy. In my opinion, society would benefit if they knew the impact of science in their everyday lives. I organize and give public talks and demonstrations on science and chemistry in society.

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Teaching as a lonely profession? Not if I can help it! Faculty are highly educated individuals with profound knowledge in academic disciplines. However, most new faculty have limited teaching experience and, while they may have experienced a range of instructional strategies as students, they are often uncertain how to implement and integrate multiple instructional strategies in their classrooms. I am a strong advocate of collaboration amongst instructors through pedagogical discussions, classroom visits, and informal peer feedback. My classroom is open to any instructor who wishes to attend. All I ask is that we discuss their observations after class: what they liked, what did not work, and what suggestions they have for my future classes. I am equally willing to attend my colleagues classes and provided feedback to them. This builds an environment open to pedagogical discussions, provides an opportunity for instructors to reflect on and expand their instructional strategies, improves instruction, and provides opportunities for pedagogical research.

TEACHING EXPERIENCE*Undergraduate courses taught*

Year <sup>1</sup>	Course (field)	Contact Hours	Duration	Students
2015	Chemistry 105 (engineering)	45	15 weeks	250
2015	Chemistry 102 (general)	45	15 weeks	190
2015	Chemistry 102 (general)	45	3 weeks	80
2015	Chemistry 105 (engineering)	45	15 weeks	250
2015	Chemistry 102 (general)	45	15 weeks	370
2015	Chemistry 102 (general)	45	15 weeks	280
2014	Chemistry 103 (general)	45	15 weeks	450
2014	Chemistry 101 (general)	45	15 weeks	430
2014	Chemistry 105 (engineering)	45	15 weeks	250
2014	Chemistry 102 (general)	45	15 weeks	400
2014	Chemistry 102 (general)	45	15 weeks	300
2013	Chemistry 103 (general)	45	15 weeks	485
2013	Chemistry 101 (general)	45	15 weeks	420
2013	Chemistry 101 (general)	45	15 weeks	250
2013	Chemistry 102 (general)	45	15 weeks	250
2013	Chemistry 102 (general)	45	15 weeks	300
2012	Chemistry 103 (engineering)	45	15 weeks	300
2012	Chemistry 101 (general)	45	15 weeks	420
2011 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	60
2011 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	60
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 283 (physical)	48 (lab)	15 weeks	3
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2011 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2010 <sup>6</sup>	Chemistry 282 (physical)	45	15 weeks	4
2010 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	70
2010 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	70
2010 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	55
2009 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	60
2009 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	40
2009 <sup>6</sup>	Chemistry 105 (engineering)	60	15 weeks	72
2009 <sup>6</sup>	Chemistry 105 (engineering)	60	15 weeks	72
2008 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	72

*Undergraduate courses taught (cont.)*

Year	Course (field)	Contact Hours	Duration	Students
2008 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	72
2008 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	44
2008 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	55
2007 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	48
2007 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2007 <sup>6</sup>	Chemistry 102 (general)	36 (lab)	15 weeks	24
2007 <sup>6</sup>	Chemistry 102 (general)	36 (lab)	15 weeks	24
2007 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2006 <sup>6</sup>	Chemistry 101 (general)	36 (lab)	15 weeks	24
2006 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	65
2006 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2006 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2006 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	60
2005 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2005 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	60
2005 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	60
2005 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	48
2005 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2005 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	60
2005 <sup>6</sup>	Chemistry 105 (engineering)	60	15 weeks	48
2004 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2004 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	24
2004 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	48
2004 <sup>6</sup>	Chemistry 101 (general)	36 (lab)	15 weeks	24
2004 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2004 <sup>6</sup>	Chemistry 102 (general)	60	15 weeks	72
2004 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	48
2004 <sup>6</sup>	Chemistry 105 (engineering)	60	15 weeks	48
2004 <sup>6</sup>	Chemistry 102 (general)	36 (lab)	15 weeks	24
2003 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	72
2003 <sup>6</sup>	Chemistry 101 (general)	60	15 weeks	80
2003 <sup>6</sup>	Chemistry 103 (engineering)	60	15 weeks	48
2003 <sup>6</sup>	Chemistry 101 (general)	36 (lab)	15 weeks	24
2003 <sup>4</sup>	Chemistry 060 (general)	14	1 week	41
2002 <sup>5</sup>	Chemistry 364 (physical)	56 (lab)	14 weeks	10
2002 <sup>5</sup>	Chemistry 364 (physical)	56 (lab)	14 weeks	7
2002 <sup>5</sup>	Chemistry 212 (analytical)	2	1 week	26
2002 <sup>4</sup>	Chemistry 121 (general)	42 (lab)	14 weeks	28
2002 <sup>4</sup>	Chemistry 121 (general)	42 (lab)	14 weeks	28
2001 <sup>4</sup>	Chemistry 121 (general)	42 (lab)	14 weeks	27

*Undergraduate courses taught (cont.)*

Year	Course (field)	Contact Hours	Duration	Students
2001 <sup>4</sup>	Chemistry 121 (general)	42 (lab)	14 weeks	27
2001 <sup>4</sup>	Chemistry 060 (general)	56 (lab)	7 weeks	29
2001 <sup>4</sup>	Chemistry 060 (general)	42 (lab)	7 weeks	29
2001 <sup>5</sup>	Chemistry 347 (physical)	56 (lab)	14 weeks	6
2001 <sup>5</sup>	Chemistry 212 (analytical)	56 (lab)	14 weeks	10
2001 <sup>5</sup>	Chemistry 212 (analytical)	56 (lab)	14 weeks	12
2000 <sup>5</sup>	Chemistry 346 (physical)	56 (lab)	14 weeks	6
2000 <sup>5</sup>	Chemistry 347 (physical)	56 (lab)	14 weeks	10
2000 <sup>5</sup>	Chemistry 347 (physical)	56 (lab)	14 weeks	10
1999 <sup>5</sup>	Chemistry 347 (physical)	56 (lab)	14 weeks	7
1999 <sup>5</sup>	Chemistry 312 (analytical)	42 (lab)	14 weeks	10
1999 <sup>5</sup>	Chemistry 245 (physical)	56 (lab)	14 weeks	14
1999 <sup>5</sup>	Chemistry 150 (general)	42 (lab)	14 weeks	14
1998 <sup>5</sup>	Chemistry 245 (physical)	56 (lab)	14 weeks	15
1998 <sup>5</sup>	Chemistry 245 (physical)	56 (lab)	14 weeks	16
1998 <sup>3</sup>	Chemistry 111 (general)	42 (lab)	7 weeks	18
1998 <sup>3</sup>	Chemistry 111 (general)	42 (lab)	7 weeks	18
1996 <sup>2</sup>	Chemistry 2130 (inorganic)	30 (lab)	10 weeks	13
1996 <sup>2</sup>	Chemistry 2040 (analytical)	30 (lab)	10 weeks	19
1995 <sup>2</sup>	Chemistry 1540 (general)	30 (lab)	10 weeks	15

1. Courses are taught at the University of Alberta, unless specified.
2. University of Denver, Denver, Colorado
3. Red Rocks Community College, Lakewood, Colorado
4. Camosun College, Victoria, British Columbia
5. University of Victoria, Victoria, British Columbia
6. Grant MacEwan University, Edmonton, Alberta

**PUBLICATIONS AND PRESENTATIONS**

*Research publications are listed in my Curriculum Vitae.*

*Articles published in refereed journals*

Jensen, R. H. "A two-dimensional test item analysis" <in preparation>, **2016**.

Jensen, R. H. "Dynamic grading of student laboratory results" <in preparation>, **2016**.

Jensen, R. H. "Creative Commons facilitated decline of quality instructional resources" <submitted>, **2015**.

Jensen, R. H. "Buoyancy and high-altitude ballooning: the Red Bull Stratos mission" *Physics Education*, 48, 707, **2013**.

### *Articles published in non-refereed journals*

Jensen, Roy H. "Redefining Plagiarism" *University Affairs*, **2012**. This article summarizes a main article available at [www.consol.ca/Plagiarism.pdf](http://www.consol.ca/Plagiarism.pdf).

### *Books and monographs*

Jensen, Roy H., *CTSS Instructor Guide* is a non-academic resource for Control Tactics and Survival Skills (CTSS) instructors. This course is a new training program that peace officers and security personnel can take to better handle themselves and those they interact with, **2016**.

Jensen, Roy H., *Communicating Science* (second edition) is an undergraduate science communication book to assist students convey scientific information to academic and public audiences. The second edition significantly expands Chapter 3 (Fundamentals of learning) and Chapter 4 (Research methodology). **2016**.

Jensen, Roy H., *Communicating Science* is an undergraduate science communication book to assist students convey scientific information to academic and public audiences, **2014**.

Jensen, Roy H., *Exploring Chemistry* (field test III) is a first-year chemistry textbook. The text consists of 20 core chapters plus chapters on the applications of chemistry in specialized fields (food science, forensic science, pharmaceutical science, etc.), **2010**. **circulation: freely available online, 150 print copies**

Jensen, Roy H., *Exploring Chemistry* (field test II), **2009**. **circulation: 300 copies**

Jensen, Roy H., *Exploring Chemistry* (field test I), **2008**. **circulation: 180 copies**

Working with the Laboratory Supervisor, we revised and rewrote many of the MacEwan first-year chemistry laboratory manuals, **2004-5**.

Jensen, Roy H. "Applied statistics in chemistry", This document forms part of the analytical and physical laboratory manuals at the University of Victoria and a stand alone document available from [www.consol.ca](http://www.consol.ca), **2002**.

### *Oral presentations*

Jensen, R. H. "Chemistry in the world around you", closing presentation and demonstration to the Edmonton Science Olympics, Edmonton, **February 2015**.

Jensen, R. H. "*Exploring Chemistry: learning about the world around you*", keynote presentation, TeamUP Science Interdisciplinary Science Competition, University of Alberta, **February 2015**.

Jensen, R. H. "Student engagement strategies in LARGE first-year classes", Think Outside the Lecture: Strategies for Active Learning symposium, University of Alberta, **August 2014**.

Jensen, R. H. "Preparing students to *Communicate Science* in academia and beyond", Biennial Conference on Chemical Education (BCCE), Grand Valley State University, Allendale, Michigan, **August 2014**.

Jensen, R. H. "Preparing students to *Communicate Science* in academia and beyond", International Conference on Chemical Education (ICCE), Toronto, Ontario, **July 2014**.

Jensen, R. H. “Technology facilitated learning: eLearning and classroom lecture capture at the UofA”, invited presentation to the chemistry department at the University of Alberta, **December 2013**.

Jensen, R. H. “Science everywhere!”, keynote presentation and demonstration, All Science Challenge (part of the Let’s Talk Science program at the University of Alberta), **May 2013**.

Jensen, R. H. “Pedagogical barriers & pedagogical continuity”, invited presentation, Alberta Chemistry Educators annual meeting, Lethbridge, Alberta, **June 2012**.

Jensen, R. H. “The future of the textbook”, invited panelist, College Chemistry Canada (C<sub>3</sub>) conference, Mt. Royal University, Calgary, Alberta, **June 2012**.

Jensen, R. H. “Exploring Chemistry: a micropublishing success”, Biennial Conference on Chemical Education (BCCE), University of North Texas, Denton, Texas, **August 2010**.

Jensen, R. H. “Computational chemistry first!”, Biennial Conference on Chemical Education (BCCE), University of North Texas, Denton, Texas, **August 2010**.

Jensen, R. H. “Exploring Chemistry: A micropublishing success”, Chemical Society of Canada Conference, Toronto, Ontario, **June 2010**.

Jensen, R. H.; Sheppard, M. “Alternate grading of student experimental results”, Chemical Society of Canada Conference, Toronto, Ontario, **June 2010**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, Alberta Teachers Association, Science Council (ATASC) conference, Red Deer, Alberta, **November 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation to the University of Alberta WISEST (Women in Science, Engineering, and Technology) students, University of Alberta, **August 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation at the Alberta Biology and Chemistry Regionals conference, sponsored by Alberta Education, **May 2009**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Greater Edmonton Teacher’s Convention Association (GETCA), **February 2009**.

Jensen, Roy H. “Leadership: doing what’s right and/or easy”, invited presentation to the MacEwan Student Ambassador Program, **February 2009**.

Jensen, Roy H. “Barriers to Post-Secondary Science: transitioning from high school”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2009**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Alberta Teachers Association, Science Council (ATASC) conference, Calgary, Alberta, **November 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.



Jensen, R. H.; Sheppard, M. “Dynamic grading of student laboratory results”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, Biennial Conference on Chemical Education (BCCE), Indiana University, Bloomington, Indiana, **July 2008**.

Jensen, R. H. “Pedagogical Continuity: Minimizing learning barriers”, College Chemistry Canada (C<sub>3</sub>) conference, Edmonton, Alberta, **June 2008**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2008**.

Jensen, Roy H. “Chemical Explorations: discovery and understanding”, Opening keynote presentation at the Society for the Advancement of Gifted Education (SAGE) conference, Northern Alberta Institute of Technology (NAIT), Edmonton, Alberta, **November 2007**.

Jensen, Roy H. “Chemistry Explosion: careers in science”, Dream Catchers conference, Grant MacEwan University, Edmonton, Alberta, **October 2007**.

Jensen, Roy H. “Chemistry in the world around you”, Young Scientists conference, University of Alberta, Alberta, **2007**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2007**.

Jensen, Roy H. “Science Outreach: Scientists in the classroom”, invited presentation at the Science and Mathematics Education Students’ Association (SMESA) conference, University of Alberta, Alberta, **January 2007**.

Gelmini, Lucio; Jensen, Roy H. “Science Outreach: Scientists in the Classroom”, Annual Alberta Teachers Association Science Council (ATA SC) conference, Kananaskis, Alberta, **November 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Annual Alberta Teachers Association Science Council (ATA SC) conference, Kananaskis, Alberta, **November 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, a presentation to invited science teachers (open invitation), Grant MacEwan University, **February 2006**.

Jensen, Roy H. “Pedagogical Continuity: Minimizing learning barriers”, Science Immersion Workshop (Edmonton Science Outreach Network), University of Alberta, **January 2006**.

Jensen, Roy H. “Pedagogical Continuity: Errant Topics in Chemistry”, Chemical Education 2005 Conference, University of British Columbia, **August 2005**.

Jensen, Roy H. “GRADEKEEPER: a record keeping program”, Learning & Teaching Center, University of Victoria, **2001**.

Jensen, Roy H. “Computer based record keeping”, Learning & Teaching Center, University of Victoria, **2001**.

*Poster presentations*

Jensen, R. H. “*inClass Live*: using Adobe Connect® for blended instruction”, Blended Learning Symposium, University of Alberta, Edmonton, Alberta, **December 2013**.

Jensen, R. H.; Sheppard, M. “Dynamic grading of student laboratory results”, 2008 College Chemistry Canada (C<sub>3</sub>) conference, Edmonton, Alberta, **July 2008**.

**CURRICULUM AND COURSE DEVELOPMENT, AND INNOVATIVE TEACHING****University of Alberta**

- 2015 – present Interdisciplinary program design team: developing lecture and laboratory courses for interdisciplinary streams in the first-year science program.
- 2014 – 2015 CHEM 10x redesign team: integration of web-enhanced and blended instructional strategies into the CHEM 10x curriculum.
- 2013 – present Visiting scientist with USchool, a UofA initiative to showcase science to junior high and high school students.
- 2014 At the request of the Provost’s Digital Learning Committee, I provided two documents: ① a review of academic copyright and intellectual property issues, and ② an opinion of the draft IP License being drafted for use at the University.
- 2013 I successfully adapted UofA technology to video capture the lecture classroom. Student feedback was phenomenally positive (please see the STUDENT FEEDBACK). I am currently working with the Center for Teaching and Learning to streamline the process and educate other instructors on this technology. A future project is to implement flipped instructional strategies to some components of my courses.

**Alberta Education**

- 2013 – present Advisor on revisions to the Chemistry 20/30 curriculum.
- 2006 Reviewed the Chemistry 30 data booklet for accuracy and currency.
- 2005 – present Organized and visited numerous junior and senior high schools to promote science and careers in science to students.
- 2005 – 2008 Consultant regarding revisions to the high school chemistry curriculum and high school textbook.
- 2004 – present Curriculum consultant with Alberta Learning on chemical education and technical reviewer for chemistry 30 and science 30 provincial exams.
- 2004 – 2012 Technical reviewer of the chemistry 30 provincial exams.

**Grant MacEwan University**

- 2010 – 2012 With the development of baccalaureate degrees, I was involved in developing the Physical Sciences degree program, designing the new laboratories, and in instrument purchasing, installation, and commissioning.
- I led the development team of
- Computational chemistry*: this second-year course provides students with an introduction to computers for data acquisition, data processing, and data reporting. The focus is on understanding the capabilities and limitations of the computational software, less so on the underlying theory. The course uses computational software, kinetic modeling software, and mathematical software, and the Microsoft Office® suite of programs.
- Chemical energetics*: this senior-level course surveys the physical chemistry of macroscopic systems, exploring thermodynamics, chemical and phase equilibria, colligative properties, electrochemistry, etc.
- Scientific inquiry and communication*: this second-year course focuses on skills critical to success in science: scientific communication, research methodology, information literacy, presentation skills, and communication skills. This course was developed by a multidisciplinary team of librarians, writing faculty (English & professional writing), and science faculty.
- I assisted with the development of
- Applied spectroscopy*: this second-year course focuses on the practical aspects of preparing and running samples, analyzing spectra, and characterizing organic, inorganic, and biological compounds. Methods are explored from a theoretical and practical perspective and include X-ray crystallography, NMR, IR, and UV-Vis spectroscopy, and mass spectrometry.
- Environmental chemistry*: this second-year course applies analytical and physical chemistry methods to understand and quantify the sources, distribution, and sinks of air, water, and soil pollutants.
- 2008 – 2010 Selection committee for Faculty Development special and term funding applications.
- 2008 Sabbatical selection committee
- 2007 – 2008 Vice Chair, Academic Council
- 2006 – 2012 Peer reviewer for MacEwan's peer evaluation and peer consultation programs.
- 2006 – 2009 First-year chemistry laboratory supervisor. Responsible for scheduling laboratory experiments, preparing laboratory quizzes and the laboratory final exam, maintaining and updating the laboratory manuals and supporting material, ensuring uniform presentation and conduct of the laboratory instructors, and addressing student concerns.

- 2006 – 2007 Mentor in the Mentorship Program: a program designed to develop teaching excellence through the facilitation of a collegial learning process between newer and more experienced faculty.
- 2005 – present Visiting scientist with the Edmonton Science Outreach Network.
- 2005 – 2012 Visiting scientist with the MacEwan science outreach program, averaging 15 visits per year. Visits involve discussing and demonstrating the relevance and applicability of science (chemistry) in society, discussing potential scientific careers, and answering questions regarding all aspects of science.
- 2005 – 2012 Developed and coordinated a chemistry outreach program where MacEwan instructors visit local grade schools. (This initiative has evolved to become a science outreach program within the Faculty of Arts and Science at Grant MacEwan University.)
- 2004 – 2007 Academic Council
- 2004 – 2006 Student Success Committee  
Orientation and Student Support Strategies Subcommittee  
Instructional Strategies Subcommittee
- 2004 After teaching at MacEwan for a year, I recommended changes to the first-year curriculum so that material was presented in a more logical order. This new instructional order has remained relatively unchanged since.
- 2004 Developed a portable demonstration cart for the safe transportation of chemicals and safety equipment to classrooms without necessary facilities.
- 2004 Planning Committee for a new science laboratory wing
- 2003 – 2005 Departmental representative on the Science Council, focused on establishing the framework of science degrees.

**University of Victoria**

- 2002 Assisted in the development of a new analytical laboratory course. The duties involved preparing new experiments, co-authoring the laboratory manual, and writing data analysis programs.
- 1999 – 2003 Faculty of Science Teaching Advisory Committee

**University of Denver**

- 1996 – 1998 Another graduate student and I organized the Chemistry Club at the University of Denver. We pioneered an outreach program where graduate students and senior undergraduates gave presentations and demonstrations in local grade schools. Our presentations were well received by over thirty classes of students from 1996 to 1998. The students were entertained and excited. The presenters learned some interesting chemistry and practiced their teaching skills.

1995 – 1997 The Chemistry department at the University of Denver was incorporating technology in the laboratory program. I assisted by developing computer programs to interface instruments and analysis software. This allows the student to focus on the underlying *chemistry*, rather than the calculations.

### PROFESSIONAL DEVELOPMENT (LEADER)

#### *Conferences*

June 2008 **Organized** and hosted the third annual Alberta Chemistry Educators (ACE) meeting at MacEwan.

#### *Workshops*

2006 – 2007 **Organized** a casual open forum (coffee shop environment) where instructors can meet and discuss issues of pedagogical interest. These forums are held twice a month during the academic year.

2007 **Presenter** at the University of Alberta Young Scientist Conference.

2006 **Organized**, in association with MacEwan Faculty Development, a workshop series that provides faculty with instructional strategies through peer (faculty – faculty) instruction, panel sessions, and from invited speakers.

2004 – 2005 **Organized**, with Dr. Lucio Gelmini and Debra Campbell (Alberta Learning), seminars and social events for local high school teachers. These events are designed to bring high school and college instructors together to build networks to improve the transition between high school and college and promote continuing education opportunities to high school instructors. (4 hours each)

2002 **Facilitator**, with the Learning and Teaching Center (University of Victoria), for new graduate-student instructors. Topics included Instructor Resources, Teaching Tips, and Critical Incident situations. (3 × 1 hour)

#### *Other activities*

2014 – present **Demonstration coordinator** for the annual University of Alberta Open House.

2013 **Master of Ceremonies** and **chemistry demonstrator** for the 2013 Canadian “You be the chemist” student challenge. Organized by the Canadian Association of Chemistry Distributors.

2012 **Judge** with the Canadian National Science Fair.

2011 – present **Judge** with the Edmonton Regional Science Fair.

2007 – 2012 **Peer Reviewer** in the faculty evaluation program at Grant MacEwan University, Edmonton, AB.

- 2006 – 2007 **Mentor** within the MacEwan Mentorship program. This program matches experienced with new instructors and provides the opportunity for both to embark in a year-long journey of discovery related to pedagogy.
- 1998 – 2003 **Judge** with the Vancouver Island Regional Science Fair.

### PROFESSIONAL DEVELOPMENT (PARTICIPANT)

- November 2015 **Use of eClass Statistics To Improve Quizzes** at the University of Alberta.
- September 2015 **Care and Teaching of First Year Students** at the University of Alberta.
- May 2015 **Harris Teaching Workshop** at the University of Alberta. Topic: Interdisciplinary Chemistry (2 days)
- May 2015 **Multifaceted summative evaluation of teaching symposium** at the University of Alberta (4 hours)
- December 2014 **Technology tools to support active learning in the classroom** at the University of Alberta (2 hours)
- November 2014 **CCCE Conference on Computers in Chemical Education**. CCCE conferences occur online semiannually and are organized by the ACS division of Chemical Education.
- May 2014 **CCCE Conference on Flipped Instruction**
- May 2014 **Harris Teaching Workshop** at the University of Alberta. Topic: Enhancing the Undergraduate Experience (2 days)
- May 2014 **Back to basics before flipping** at the University of Alberta (5 hours over 3 weeks)
- April 2014 **Course (Re)Design** at the University of Alberta (2 hours)
- March 2014 **Flipping your classroom** at the University of Alberta (2 hours)
- August 2013 **Blended Learning Symposium** at the University of Alberta (7 hours)
- August 2013 **Adobe Connect Level 2** at the University of Alberta (2 hours)
- August 2013 **Adobe Connect Level 1** at the University of Alberta (2 hours)
- July 2013 **Student Engagement Strategies for the Large Classroom** at the University of Alberta (1 hour)
- May 2013 **Harris Teaching Workshop** at the University of Alberta. Topic: Electronic Resources for Teaching Chemistry (2 days)
- June 2012 **ACE conference** in Lethbridge, Alberta (1 day)
- June 2012 **College Chemistry Canada (C<sub>3</sub>)** conference in Calgary, Alberta. (3 days)
- May 2012 **Canadian Society for Chemistry (CSC)** conference in Calgary, Alberta (5 days)
- May 2012 **Harris Teaching Workshop** at the University of Alberta. Topic: concepts and misconceptions in chemistry (2 days)

- June 2011 **ACE conference** in Edmonton, Alberta (1 day)
- May 2011 **Harris Teaching Workshop** at the University of Alberta. Topic: teaching chemistry laboratories (1 day)
- September 2010 **Inclusive Rhetorical Practices and Uses of Silence in the Classroom** (2 hours)
- September 2010 **Scholarship of Teaching and Learning (SoTL) Strategy Session** (1 hour)
- August 2010 **Biennial Conference on Chemical Education** in Denton, Texas. I gave two presentations and organized and chaired three symposia (5 days)  
Strategies for student engagement in first-year chemistry  
Physical and Computational Chemistry in the Undergraduate Curriculum: Applied, Interesting, and Relevant  
Micropublishing
- June 2010 **ACE conference** in Calgary, Alberta (1 day)
- June 2010 **Canadian Society for Chemistry (CSC)** conference in Toronto, Ontario (5 days)
- June 2010 **Peer Observation Skill Development** (3 hours)
- May 2010 **Academic Policies Update** (3 hours)
- June 2009 **ACE conference** in Red Deer, Alberta (1 day)
- May 2009 **Academic Affairs Update** (3 hours)
- May 2009 **Academic Policies Update** (3 hours)
- May 2009 **Scholarship of Teaching and Learning** by Dr. Eileen Herteis (2.5 hours)
- May 2009 **Multiple Choice Testing** by Dr. David DiBatista (2 hours)
- April 2009 **Classroom Assessment Techniques** workshop presented by Dr. Thomas Angelo (author of CATs) and hosted by University of Alberta University Teaching Services (2 days)
- July 2008 **Multiple choice testing** (2 hours)
- July 2008 **Biennial Conference on Chemical Education** in Bloomington, Indiana. I gave two presentations and organized and chaired a symposium on 'Publishing for today's learner'. (5 days)
- June 2008 **ACE conference** in Edmonton, Alberta. I organized and hosted this conference at Grant MacEwan University. (1 day)
- June 2008 **Academic Policies Update** (3 hours)
- June 2008 **Canadian Society for Chemistry (CSC)** conference in Edmonton, Alberta. (5 days)
- June 2008 **College Chemistry Canada (C<sub>3</sub>)** conference in Edmonton, Alberta. I gave two presentations and co-chaired a session on 'Demonstration showcase: lights, camera, action!' (3 days)

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- Feb. 2008 **Intellectual Properties Ownership: Faculty Members' Rights and Responsibilities** (1.5 hours)
- Feb. 2008 **Making Lectures More Meaningful: Integrating Active Learning** (1.5 hours)
- Nov. 2007 **Society for the Advancement of Gifted Education (SAGE) conference** at NAIT, Alberta. Presented the opening keynote lecture. (2 days)
- June 2007 **ACE conference** in Calgary, Alberta (1 day)
- May 2007 **Peer Review of Teaching** (8 hours)
- May 2007 **Using Brain Research to Enhance and Energize Instruction** (6 hours)
- Mar. 2007 **Scholarly Teaching** (3 hours)
- Mar. 2007 **Peer Evaluation** (3 hours)
- Feb. 2007 **Instructional Skills Workshop** (32 hours)
- Nov. 2006 **Statistics and Data Analysis for Smarties** (2 hours)
- Nov. 2006 **The Effect of Classroom Peer Observation on Teaching Improvement** (2 hours)
- Nov. 2006 **Designing Effective Machine Scored Questions** (2 hours)
- Nov. 2006 **Peer Evaluation Workshop** (2 days)
- June 2006 **Great Teachers' Seminar** in Banff, Alberta (5 days)
- 2006 **Orientation to the new Faculty Evaluation System** (7 hours)
- 2006 **Activities for a Dynamic Learning Environment** (4 hours)
- 2006 **Catching Them as they Fall** (3 hours)
- 2006 **Academic Policies Forum** (2 hours)
- 2006 **Teaching and Learning with the Brain in Mind** (3 hours)
- 2006 **Peer Review Forum** (3 hours)
- 2005 **Chemical Education conference** in Vancouver, BC (4 days)
- 2004 **Biennial Conference on Chemical Education** in Ames, Iowa (5 days)
- 2004 **Opportunities in Conflict** workshop. (8 hours)
- 2004 **Harris Teaching Workshop** at the University of Alberta. Topic: teaching first-year chemistry (1 day)
- 2004 **Preparing Multiple Choice Questions that Demand Critical Thinking** workshop (3 hours)
- 2004 **Interactive Learning Object Design** workshop on developing student-centered learning objects (teaching tools) to augment and enhance courses. (8 hours)



- 2003            **Improving Online Accessibility** seminar focusing on the technology available to disabled persons and recommended changes to making classroom and online media more accessible. (1.5 hours)
- 2003            **Copyright Issues for Online Course Development** seminar focusing on the legal requirements when distributing material in classrooms and online. (1.5 hours)
- 2001            **Conflict Resolution Workshop** focusing on conflicts likely in academia. Learning and Teaching Center, University of Victoria. (16 hours)
- 2000            **Instructional Skills Workshop** presenting alternate teaching methods. Learning and Teaching Center, University of Victoria. (24 hours)

**TEACHING AWARDS** (see my Curriculum Vitae for the complete list of grants, awards, and scholarships)

- 2015            ΔX (Delta Chi) Teacher Excellence Appreciation award
- 2003            Nominated for the President's Distinguished Service Team award at the University of Victoria.
- 2003            Andy Farquharson award for excellence in graduate student teaching.
- 1997            Visiting Scientist of the Year award from Metropolitan State College of Denver.