Catherine Hart

Curriculum Vitae

Science and Mathematics Faculty
Arizona State University Polytechnic Campus
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EDUCATION

Master of Science in Statistics, 2020
Arizona State University, Tempe, Arizona
Master of Science in Technology, 2005
Arizona State University, Tempe, Arizona
Bachelor of Science in Chemical Engineering, 1992
Arizona State University, Tempe, Arizona

ACADEMIC & ADMINISTRATIVE APPOINTMENTS

Administrative

2020 – Present:	**Associate Faculty Head** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University
2019 – 2020:	**Faculty Liaison** in the College of Integrative Sciences & Arts, Dean's Office at Arizona State University
2018 – 2019:	**Associate Faculty Head** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University
2017 – 2018:	**Interim Faculty Head** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University

Academic

2016 – Ongoing:	**Senior Lecturer** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University
2013 – 2016:	**Lecturer** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University
2009 – 2012:	**Lecturer (Multi-Year: 2007 – 2011)** in the College of Technology & Innovation, Department of Applied Sciences and Mathematics at Arizona State University
2006 – 2008:	**Lecturer** in the School of Applied Arts and Sciences, Department of Applied Biological Sciences at Arizona State University
2003 – 2005:	**Faculty Associate** in the School of Applied Arts and Sciences, Department of Applied Biological Sciences at Arizona State University

ACADEMIC EXPERIENCE

Senior Lecturer, Arizona State University Polytechnic Campus, Mesa, AZ **(Aug 2016 – Current)**

Lecturer, Arizona State University Polytechnic Campus, Mesa, AZ **(Jan 2006 – Aug 2016)**

Teaching Experience

- *General Courses Taught*: College Mathematics, Precalculus, Calculus for Engineers I, II and III, Calculus for Life Sciences, Modern Differential Equations and Applied Linear Algebra.
- *BAS Program Specific Courses Taught:* Contextual Uses of Algebra, Geometry, & Trigonometry; Numeracy in Technology; Physical Sciences in Technology
- Established an online platform for Physical Sciences in Technology.
- Develop curriculum to support the online deliver of Applied Linear Algebra, Modern Differential Equations, and Introductory Applied Statistics
- Incorporate the use of technology such as Excel, Word Reports, PowerPoint presentations, graphing calculators, Geogebra, Maple, MATLAB, clickers, and various online resources for each curriculum.
- Provide students with practical skills to succeed in math and other courses in college by evaluating the student's knowledge of subject matter and monitor progress.
- Develop supplementary course material, syllabi, course outlines, and exams. Grade all assigned material, projects, and exams for the courses.
- Attend workshops to improve on training and teaching skills, remaining current with developments as well as enhancing knowledge base.
- Supported adjunct faculty and mentored supplemental instructors.
- Worked with students to complete honors enrichment projects.

Faculty Associate, Arizona State University (Aug 2003 – Dec 2005) Polytechnic Campus, Mesa, AZ

Teaching Experience

- *General Courses Taught*: College Mathematics, Mathematics of Change I
- *BAS Program Specific Courses Taught:* Contextual Uses of Algebra, Geometry, & Trigonometry; Numeracy in Technology; Physical Sciences in Technology
- Established a hybrid platform for Physical Sciences in Technology.
- Established an online option for Numeracy in Technology.
- Develop supplementary course material, syllabi, course outlines, and exams for classes. Grade all assigned material, projects and exams for the courses.
- Attend workshops to improve on training and teaching skills, remaining current with developments as well as enhancing knowledge base.
- Served on the Mathematics Committee.

Courses Taught

APM 270, Mathematics of Change I
APM 271, Mathematics of Change II
ASC 301, Contextual Uses of Algebra in Technology
ASC 302, Contextual Uses of Geometry in Technology
ASC 303, Contextual Uses of Trigonometry in Technology
ASC 315, Numeracy in Technology
ASC 325, Physical Sciences in Technology
MAT 142, College Mathematics
MAT 170, Precalculus
MAT 251, Calculus for Life Sciences
MAT 265, Calculus for Engineers I
MAT 266, Calculus for Engineers II
MAT 267, Calculus for Engineers III

MAT 275, Modern Differential Equations
MAT 343, Applied Linear Algebra
STP 420, Introductory Applied Statistics

Curriculum Development

- *Pathways to Calculus.* Developed online homework assignments for the textbook to support the pre-calculus curriculum adopted at the university level. This is an on-going project with further development to support the development of the curriculum (2010 – 2014)
- *Pathways to Calculus.* Workshop participant providing general and specific feedback for worksheets and textbook revisions. Provide ideas for supporting students to learn the foundational ideas from the curriculum and acquire essential problem-solving abilities for succeeding in calculus (June 2010, July 2011)
- *Introductory Applied Statistics Online Course Design and Implementation.* Continuing development and delivery of an online introductory statistics course with customization of inferential statistics based on individual student programs of study. (2010 – 2013)
- *Physical Sciences in Technology Online Course Design and Implementation*. Continuing development of presentations, exams, discussion topics and laboratory experiments involving physics, chemistry, environmental issues, and hazardous materials to reflect current scientific concepts for in-class instruction, hybrid and online class structure. (2004 – Present)
- *Numeracy in Technology Online Course Design and Implementation.* Continuing development of course topics and materials for in-class and on-line instruction structure focusing on contextual uses of mathematics in applied sciences. This course emphasizes using mathematical methodologies to solve technology-related problems. (2004 – Present)
- *Mathematics of Change I and II* developing team member. Participated in developing lesson plans to incorporate technology into the teaching of calculus utilizing MATLAB software and modeling complex systems applied to world applications. (2005 – 2007)
- *Contextual Uses of Algebra, Geometry, & Trigonometry*. Developed curriculum and administered three separate one credit hour classes focusing problem solving to real-world applications with a quantitative literacy focus. Classes require ongoing development of course topics and materials for in-class instruction and on-line class structure. (2003 – 2005)

FACULTY SERVICE

Individual Assignment

- Mathematics Program Lead (2015–Present)
- Applied Biological Sciences Graduate Program Coordinator (2018–2021)
- Applied Biological Sciences Course Scheduler (2018–2019, 2020–Present)

Committees

- Unit Personnel Committee for Contract Faculty (2018–Present)
- Mathematics Faculty Search Committees (2007, 2008, 2010, 2014, Chair for 2015–Present)
- College Personnel Committee for Contract Faculty (2012–2015, Chair for 2014–2015, 2021–Present)
- Applied Biology Contract Faculty Search Committee (Chair for 2017–2019, 2021)
- Counseling & Counseling Psychology Contract Faculty Search Committee (2019–2020)
- Faculty Teaching Evaluation Committee – Chair (2009–2016)
- Chemistry Faculty Search Committee (2013, 217, 2021)
- STEM Core and General Studies Committee (2012)
- Department Curriculum and Instruction Committee (2009–2010, Spring 2012)
- Mathematics Committee (2005–2009)

PUBLICATIONS, PAPERS/PRESENTATIONS, SPECIALIZED GROUPS, CONFERENCES

Publications

- Van de Sande, C., Boggess, M. & **Hart-Weber, C.** (2014). *How do high school students get help on their mathematics homework? A study of digital and non-digital resource use*. Journal of Computers in Mathematics and Science Teaching. 33 (4), pp. 455-483. Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

Papers and Presentations

- Van de Sande, C., Boggess, M. & **Hart-Weber, C.** (2013). How does the 'digital generation' get help on their mathematics homework? In *Proceedings of the International Conference e-Learning 2013* (pp.33-40)
- Van de Sande, C., **Hart-Weber, C**. (2011). *Prescribing Help for Future Doctors: Characteristics of an Open, Online, MCAT Study Forum.* Paper accepted for presentation at the IADIS International Conference on Cognition and Exploratory Learning in Digital Age CELDA 2011, Rio de Janeiro, Brazil.
- **Hart-Weber, C.**, Oehrtman, M., Martin, J., Swinyard, C., & Roh, K. (2011). *The Nature and Effect of Idiosyncratic Examples in Student Reasoning about Limits of Sequences.* In (Eds.) S. Brown, S. Larsen, K. Marrongelle, and M. Oehrtman, Proceedings of the 14th Annual Conference on Research in Undergraduate Mathematics Education, Vol. 4, pg 87-91. Portland, Oregon.
- Oehrtman, M., Swinyard, C., Martin, J., **Hart-Weber, C.**, & Roh, K. (2011). *From Intuition to Rigor: Calculus Students' Reinvention of the Definition of Sequence Convergence.* In (Eds.) S. Brown, S. Larsen, K. Marrongelle, and M. Oehrtman, Proceedings of the 14th Annual Conference on Research in Undergraduate Mathematics Education, Vol. 2, pg 325-338. Portland, Oregon.
- Martin, J., Oehrtman, M., Roh, C., Swinyard, C., & **Hart-Weber, C.** (2011). *Students' Reinvention of Formal Definitions of Series and Pointwise Convergence*. In (Eds.) S. Brown, S. Larsen, K. Marrongelle, and M. Oehrtman, Proceedings of the 14th Annual Conference on Research in Undergraduate Mathematics Education, Vol. 1, pg 239-254. Portland, Oregon.

Specialized Group Involvement

- Working Group on Infinity and Limits in Undergraduate Mathematical Learning at the Thirteenth Conference on Research in Undergraduate Mathematics Education, Raleigh, NC, February 2011
- Calculus Research Group (CRG). CRG is a community of calculus/analysis undergraduate education researchers from a variety of different institutions that meet weekly through online seminars to encourage quality research and its application in teaching practices. (2010 – 2012)

Conferences

- Annual Excellence in Mathematics Conference, Chandler, AZ; 2018, 2019, 2020, 2021
- Research in Undergraduate Mathematics Education (RUME), Portland, OR, February 2011
- Transforming Research in Undergraduate STEM Education (TRUSE), Orono, ME, June 2010
- Research in Undergraduate Mathematics Education (RUME), Raleigh, NC, February 2010
- National Numeracy Network (NNN), University of Washington, Bothell, WA, June 2009

INDUSTRY EXPERIENCE

Nalco Chemical Company, Phoenix, AZ (Oct 2000 – Aug 2003)

Sales Engineer

- Managed a $1.3 million base business. Negotiated contracts, pricing, and procurement of new business sites while developing and maintaining budgets for a multiple customer base.
- Developed and conducted technical training courses on various subject matter. Provided statistical data analysis reports on system parameters and technical guidance for new product additions, equipment, and installations at the customer sites.
- Supervised onsite personnel to maintain system compliance.
- Interacted with personnel worldwide to develop and implement various benchmarking programs and develop return on investment projects.

Arch Chemicals, Inc., Queen Creek, AZ (Sept 1994 – June 2000)

Environmental Engineer

- Supervised facility compliance with permits, waste management, and chemical storage. Maintained permits according to requirements and regulations.
- Managed $500,000 waste disposal budget for company. Negotiated contracts, pricing, and procurement of disposal sites.
- Developed and conducted compliance training courses on facility requirements. Participated in projects to determine environmental, health and safety, and operational impact on the facility. Conducted facility audits on current policies, procedures, and documentation for compliance with environmental regulations.
- Interacted with federal, state, and local regulatory agencies and customers to resolve compliance issues and complaints, provide technical guidance, and assist in audits.

Packaging Supervisor

- Managed multiple shifts producing products and packaging in clean room environments while exceeding customer expectations/requirements.
- Interacted with customers to resolve quality assurance issues on existing product lines.
- Reengineered packaging lines resulting in increased throughput, decreased cost, and Improved product quality for customers. Specified, evaluated, and purchased equipment.

Process Engineer

- Specified, purchased, and executed installations of chemical process and laboratory equipment, controls, and clean rooms.
- Managed partnership with an abroad joint venture company resulting in new startup of a chemical manufacturing facility.
- Participated as a startup team member for the Queen Creek facility. Developed and implemented process and packaging procedures for new facility operations.
- Team member of five engineers responsible for overseeing the construction of a multi-million-dollar chemical production facility.

Polibrid Coating, Inc., Brownsville, TX (Aug 1992 – May 1994)

Product Manager

- Managed quality assurance for the production of polyurethane coating products manufactured by the company.
- Developed and tested new products for manufacturing.
- Developed and implemented worker safety and hazardous waste disposal programs.

REFERENCES

Available upon request.