Catherine Hart

Curriculum Vitae

Science and Mathematics Faculty
Arizona State University Polytechnic Campus
6073 S Backus Mall
Wanner Hall, 240K
Mesa, AZ 85212

E-Mail: Catherine.hart@asu.edu
Office: (480) 727-1467

EDUCATION

Master of Science in Statistics
Arizona State University, Tempe, Arizona

Master of Science in Technology
Arizona State University, Tempe, Arizona

Bachelor of Science in Chemical Engineering
Arizona State University, Tempe, Arizona

ACADEMIC & ADMINISTRATIVE APPOINTMENTS

Administrative

2024 – Present:	**Assistant School Director,** School of Applied Sciences & Arts, College of Integrative Sciences & Arts, Arizona State University
2020 – 2024:	**Associate Faculty Head,** Science and Mathematics, School of Applied Sciences & Arts, College of Integrative Sciences & Arts, Arizona State University
2019 – 2020:	**Faculty Liaison**, Dean's Office, College of Integrative Sciences & Arts, Arizona State University
2018 – 2019:	**Associate Faculty Head**, Science and Mathematics, College of Integrative Sciences & Arts, Arizona State University
2017 – 2018:	**Interim Faculty Head**, Science and Mathematics, College of Integrative Sciences & Arts, Arizona State University

Academic

2026 – Ongoing:	**Teaching Professor** in the College of Integrative Sciences & Arts, Science and Mathematics Faculty at Arizona State University
2016 – 2026:	**Associate Teaching Professor / 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 Contract: 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

Teaching Professor / Associate Teaching Professor / Senior Lecturer (Aug 2016 – Current)

Arizona State University
Polytechnic Campus, Mesa, AZ

Teaching Experience

- ***General Courses Taught*:** Calculus for Engineers I, II and III, Calculus for Life Sciences, Modern Differential Equations and Applied Linear Algebra, Applied Statistics
- ***BAS Program Specific Courses Taught:*** Numeracy in Technology; Physical Sciences in Technology
- ***Career Preparation Courses Taught:*** Building Your Professional Self, Career Competencies and Skills, Internship, Study Abroad, Applied Biological Sciences Seminar
- Deliver instruction across multiple mathematics and applied science courses in traditional, hybrid, and online modalities, maintaining consistent teaching effectiveness in challenging STEM service courses.
- Develop curriculum and course materials for new and existing programs including Applied Biological Sciences career preparation sequence, industry partnership courses, and international experiential learning opportunities.
- Create comprehensive instructional materials including syllabi, assessments, laboratory experiences, projects, and supplementary resources incorporating educational technology tools to enhance student engagement and learning outcomes.
- Provide student mentoring and academic support through Barrett Honors contracts, independent research supervision, individualized instruction, office hours, and professional development guidance across theoretical and applied projects.
- Design and implement online course delivery utilizing diverse educational technologies, assessment platforms, and instructional design principles to support student learning in mathematics and applied sciences.
- Maintain academic program oversight for curriculum development and course offerings within Science and Mathematics degree programs, ensuring alignment with program learning objectives and accreditation standards.
- Coordinate specialized programs including study abroad experiences, industry partnerships, and interdisciplinary course development to expand educational opportunities for students in applied sciences.
- Support faculty teaching development and mentoring by providing course setup assistance, collaborative curriculum design, and instructional guidance for existing faculty, new faculty and Faculty Associates.

Lecturer, Arizona State University (Jan 2006 – Aug 2016)

Polytechnic Campus, Mesa, AZ

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 delivery 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. Graded all assigned material, projects, and exams for the courses.
- 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, ASC 325.
- Established an online option for Numeracy in Technology, ASC 315.
- 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 training and teaching skills, remaining current with developments as well as enhancing knowledge base.
- Served on the Mathematics Committee.

Courses Taught

Career Preparation Courses

ABS 200, Building Your Professional Self
ABS 300, Career Competencies and Skills
ABS 484, Internship
ABS 484 Study Abroad: Sun Devils in Guatemala: English-Speaking Medical and Veterinary Care Internships
ABS 490, Applied Biological Sciences Seminar
MAT 484, Internship

Mathematics Courses

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
MAT 142, College Mathematics
MAT 170, Precalculus
MAT 211, Math for Business Analysis
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
MAT 499, Individualized Instruction

Science Courses

ABS 394, Food and Human Health
ASC 325, Physical Sciences in Technology

Statistics Courses

ABS 350, Applied Statistics
STP 420, Introductory Applied Statistics

FACULTY SERVICE

Individual Assignment

- Mathematics Program Lead (2015 – present)
- Applied Biological Sciences Graduate Program Coordinator (2018 – present)
- Applied Biological Sciences Course Scheduler (2018 – present)
- Poly Science and Mathematics Course Management (2020 – present)

Committees

- ASU Career Faculty Association (CFA) Committee, Member (2025-2026)
- College Academic Standards Committee, Member (2022 – present)
- College Personnel Committee for Contract Faculty (Chair: 2014 – 2015, 2021- 2022, Member: 2012 – 2014)
- Unit Personnel Committee for Contract Faculty (Chair: 2018 – 2022, Co-Chair: 2023)
- Applied Biological Sciences Graduate Committee (Member: 2023 – present)
- Mathematics Contract Faculty Search Committees (Chair: 2015 – 2024, Member: 2007, 2008, 2010, 2014)
- Mathematics Associate Professor Search Committee (Member: 2019)
- Counseling & Counseling Psychology Contract Faculty Search Committee (Member: 2019– 2020)
- Applied Biology Contract Faculty Search Committee (Chair for 2017– 2019, Member: 2023, 2024, 2026)
- Pre-Vet Clinical Assistant Professor Faculty Search Committee (Member: 2023)
- Chemistry Contract Faculty Search Committee (Chair: 2023, Member: 2021, 2013)
- Chemistry Instructional Professional Search Committee (Chair: 2017, 2021)
- Biology Instructional Professional Search Committee (Chair: 2018, 2022)
- CISA Assistant Director Advisor Hiring Committee, Member (2018)
- Physics Instructional Professional Search Committee (Chair: 2017)
- Faculty Peer Teaching Evaluation Committee (Chair: 2009 – 2016)
- STEM Core and General Studies Committee (2012)
- Department Curriculum and Instruction Committee (2009 – 2010, Spring 2012)
- Mathematics Committee (2005– 2009)

Workshops and Other Service

- Mentor for the CISA Mentoring Program (Spring 2025)
- ACETS Evaluator for Math and Statistics (2019 – present)
- Articulation Task Force (ATF) AZ State Representative for ASU Poly in Math and Stats (2019-present)
- CISA Bylaws Taskforce, Member (Spring 2023)
- ASU Sparky's Westies Student Club, Secondary Faculty Advisor (2023)
- Strategic Scheduling Group (Unit and College Level) (2019-2022)
- ASU Poly VIDA Student Club, Faculty Advisor (2021-2022)
- CISA Faculty Onboarding Working Group (2020-2021)
- SIMIODE judge for the SCUDEM V International Competition focusing on modeling with differential equations (2020, 2021, 2022)
- International Science and Engineering Fair (ISEF) grant award judge in Environmental Engineering (2016, 2019, 2021)
- Enrollment Management Working Group (2019-2021)
- Arizona Mathematics Partnership Task Force (AMP Task Force) (2019-2020)
- Faculty Annual Review Workshop for Poly Science and Mathematics Unit in CISA, creator and presenter, (2018 – 2020)

- Raising Calculus to the Surface/Vector Calculus Bridge Project Workshop, Participant – limited seats, accepted from application pool (2019-2020)
- Leadership Academy peerLA Cohort VI program (2018-2019). Participant by application process for yearlong leadership program.
- TIMES Teaching Fellow in Differential Equations (Summer and Fall 2017), Accepted through application process as a TIMES Teaching Fellow.

Grant Opportunity

- ASU Women and Philanthropy Grant proposal 2023-2024 ($49,999): One of two proposals selected by CISA to move forward for consideration. The proposal was not selected as a finalist from the ASU Women and Philanthropy Organization. The Connecting Pathways proposal focused on introducing students to immersive STEM experiences within both ASU and local industry partners near the Polytechnic campus. Through this, our aim was to foster and cultivate their interest in the STEM field, establishing well-defined pathways from college to successful careers in STEM disciplines. This is an extension of an existing program at the Polytechnic campus.

Awards

- Apple Polisher Award, honored by the student organization ASU Devil's Advocates, recognizing contributions to students at ASU (2017)

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, 2022
- 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 (2000 – 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 (1994 – 2000)

Environmental Engineer

- Supervised facility compliance with permits, waste management, and chemical storage. Maintained permits according to requirements and regulations.
- Managed a $.5 million waste disposal business. 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 **(1992 – 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.