DR. ANNA HAYWOOD

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EDUCATION

ASU SENSIP MACHINE LEARNING RET PROGRAMS, Summer 2021 & 2024
Arizona State University, Tempe, Arizona

PHD, MECHANICAL ENGINEERING, Spring 2014
Arizona State University, Tempe, Arizona

MS, BIOENGINEERING, May 2002
Arizona State University, Tempe, Arizona

BSE, ELECTRICAL ENGINEERING, December 1995
Arizona State University, Tempe, Arizona
Graduated with Honors: Magna Cum Laude

RECENT PROFESSIONAL DEVELOPMENT EXPERIENCE

Faculty Associate, School of Mathematical and Natural Sciences, Arizona State University West   1/2025-12/2025

- Designer and Facilitator of BDS Machine Learning Workshop I and *Quantum* Machine Learning Workshop II for Professional Development in Life Science Applications
  - Responsible for planning and structuring the workshop including issuance of Milestone Certificates for Professional Development
  - Curriculum development: Identified learning objectives aligned with the needs of life science professionals
  - Tailoring Content: Customized machine learning content to biological datasets and real-world applications, such as Coral Reef Bleaching prediction
  - Instructional Design: Created slides, notebooks (Jupyter), hands-on labs, quizzes, and case studies that balanced theory with practice
  - Technology Integration: Set up free, open-source computational environments
  - Engaging Participants: Fostered a collaborative learning environment through group work, discussions, and project-based learning.
  - Flexibility: Adapted pace and teaching style to the audience's needs.
  - Assessment & Feedback: Assessed participants' progress and provided constructive feedback and suggestions for further learning.
  - Curated guest speakers from academia and industry to share cutting-edge research and applications, enriching participants' exposure to real-world quantum machine learning practices. The idea was to bridge theoretical foundations with emerging real-world applications in quantum machine learning.
- **Milestone Certificates!! Supported professional development pathways through issuance of skill development in machine learning**

RECENT UNIVERSITY TEACHING EXPERIENCE

Faculty Associate, School of Integrated Engineering, Arizona State University West   1/2026-5/2026

- Scheduled to teach EEE 120 Digital Design Fundamentals

Faculty Associate, School of Mathematical & Natural Sciences, Arizona State University West   5/2025-12/2025
- **Co-designed and co-instructing LSC 541: Advanced Biostatistics**, a graduate-level course emphasizing experimental design, multivariate analysis, and computational methods using JMP, a GUI statistical software.
- Collaborated on curriculum development, lecture materials, and assessment strategies to enhance students' quantitative reasoning and data analysis skills.
- Created a comprehensive curriculum that integrated theoretical statistics with real-world biological data applications.
- Developed interactive modules and case-based labs that improved students' proficiency in statistical modeling, data visualization, and research reproducibility.

Faculty Associate, School of Integrated Engineering, Arizona State University West   1/2025-5/2025

- Professor for EEE 120 Digital Design Fundamentals

Faculty Associate, School of Electrical, Computer, and Energy Engineering   8/2024-12/2024
Arizona State University
- Professor for EEE 120 Digital Design Fundamentals

COMMUNITY COLLEGE TEACHING EXPERIENCE

Mathematics OYO Full-Time Faculty at Glendale Community College   Fall2020 – 5/2024

I am a dedicated professional with a passion for creating safe, caring yet challenging and dynamic learning environments. I am committed to facilitating success for those whom I serve with my positive, "can do" approach to daily challenges. As an educator, I have a natural ability to work with and lead teams within complex organizational systems. I strive to make every classroom experience a unique and successful journey. I actively pursue professional development. As full-time contracted faculty for the past six semesters, I have been and am currently performing these essential functions:

- Instruction and Course Management: I have 20+ years of experience supervising and instructing a diverse student population using various modalities of instruction, such as in-person and virtual (synchronous and asynchronous). I have 10+ experience managing the course using the college's approved online course learning management system (currently Canvas). I have 20+ years of experience preparing instruction, course materials, course syllabi, and course outlines. I have 20+ years of experience assessing students' knowledge of subject matter being taught by preparing and grading all forms of assessment

- <u>Service</u>: I regularly engage in the academic life of the college by participating in department, college, and district committees and activities both in-person and virtually. I hold at least 5 weekly academic support hours for students and usually double that amount, including volunteering as a tutor at the GCC Math Solutions in-person and virtually through Discord as well as support through Zoom, emails and Canvas Messaging.
- <u>Professional Development</u>: I continually enhance my knowledge of the subject matter, pedagogy, and technological tools; and I promote the continued improvement of teaching and learning through attendance at conferences, courses, seminars, and/or workshops. Additionally, I have participated in several educational research projects funded by grants.

PROFESSIONAL SKILLS SUMMARY

- Effectively supervise and instruct a diverse student population in a classroom setting using various methods of instruction.
- Develop clear and thorough written syllabi, course outlines and course materials, including course calendars, lessons plans, and videos for both an in person and a virtual environment.
- Evaluate knowledge of subject matter and monitor students' scholastic progress and records; prepare and grade students' examinations and projects.

- Effective course development & implementation demonstrated through developing and enhancing knowledge of subject matter and individual training skills required to remain current with new trends, developments, and technologies in the field through attendance at workshops, courses, seminars and conferences; effectively integrate new technologies into the classroom, online, and in lab settings.
- Maintain flexible in person and virtual office hours to assist and advise students. Hold at least 5 weekly academic support hours for students and usually double that amount, including volunteering as a tutor at the GCC Math Solutions in-person and virtually through Discord as well as support through multiple options for contact including Zoom/WebEx/GoogleMeet, emails and Canvas Messaging.
- Actively engage in the academic life of the college by participating in district-wide, campus and departmental activities and community committee work.
- Construct formative and summative learning assessments and evaluate student comprehension of subject matter.
- Consult with faculty and staff to enhance student learning and retention.
- Participate in Department meetings and activities including weekly 4DX meetings to support the department and college's Super Goal of Student Completion by encouraging student retention and completion.
- Complete all course assessments including the Course Level Assessments and Student Evaluations
- Complete all Employee Learn Center online trainings

List of OYO Mathematics Courses 2023-2020

- Spring 2023: MAT151, MAT151 online, MAT114, and MAT114 late start online.
- Fall 2022: MAT187, MAT151, and MAT142. Carried out a unique Project-Based Learning project in two of my MAT151 classes. Shared project outcomes with colleagues and two departments.
- Spring 2022: MAT220 Calculus Live Online, MAT182 Online, and MAT 114 late start in person. Applied

and was accepted for Reimagine professional development and Rice U professional development.

- Fall 2021: MAT212 Brief Calculus online, MAT150 in person, MAT 115 in person, MAT 142 online. Accepted an additional overload MAT 142 Live Online class mid-way through the semester when the original instructor became ill.
- Summer 2021: Accepted to participate in the Sensor Signal and Information Processing Research Experience for Teachers (RET) Summer Program at Arizona State University. The program immersed community college instructors in cutting-edge machine learning research for energy and sensor systems. From this experience, I developed two global community projects for twoCollege Math Prep courses at GCC.
- Fall 2020 & Spring 2021: Responsible for and successfully instructed online classes during the Pandemic including MAT151, MAT187, MAT142, and MAT182.

Adjunct Faculty Instructor, Department of Mathematics Estrella Mountain Community College
- Instructor for College Mathematics with Review (MAT 146)   Spr2020
- Instructor for Intermediate Algebra with Review (MAT 126)   Fall2019
- Instructor for College Algebra/Functions (MAT 151)   Fall2018 & Spr2019
- Instructor for College Mathematics (MAT 141)   Spr2018 from 1/17-3/9
- Instructor for Introductory Algebra course (MAT091)   Spr2018 from 3/19-5/10

Mathematics OSO Full-Time Faculty at Glendale Community College   Fall2012
- Responsible for and successfully instructed six classes including hybrid MAT082, hybrid MAT122 and in-person MAT082, MAT108 and two MAT142
- Lectured to a diverse student population
- Created effective presentations for the hybrid as well as the traditional classes
- Monitored student scholastic records and completed associated progress reports
- Constructed learning assessments and evaluated student comprehension of subject matter
- Developed syllabi, course calendars, outlines, course materials and lessons plans for both online and in the classroom
- Integrated computer technology into classroom teaching
- Created engaging classroom activities
- Remained accessible to students, maintained office hours, provided multiple options for contact, and held extra help sessions for students on difficult topics
- Provided one-on-one tutoring for students in Math Solutions Center
- Consulted with faculty and staff to enhance student learning and retention
- Participated in Department meetings and activities and completed all course assessments

Adjunct Faculty Instructor, Department of Mathematics and Engineering Glendale Community College
- Instructor for Trigonometry (MAT 182)   Nine semesters between Spr2011 and Sum2018
- Instructor for 2 Basic Math courses (MAT082)   Fall2017
- Instructor for College Algebra/Functions (MAT 150)   Fall2013, Fall2017
- Instructor for Introductory Algebra course (MAT092)   Spr2005, Fall2011, Spr2017
- Instructor for Intermediate Algebra (MAT 121) – Hybrid   Spr2017

- Instructor for College Mathematics (MAT 141)   Spr2017
- Instructor for MATLAB programming (ECE 105)   Spr2014, Spr2015
- Instructor for Engineering Problem Solving and Design (ECE 103AB)   Spr2014
- Instructor for College Mathematics (MAT 142) – ONLINE   Sum2013
- Instructor for Calculus with Analytic Geometry I (MAT 220) – Hybrid   Sum2013
- Instructor for 2 Tutored Mathematics (MAT 108)   Spr2013
- Instructor for Mathematics Concepts/Applications (MAT 102)   Spr2013
- Instructor for Intermediate Algebra (MAT 122) – Hybrid   Spr2012
- Instructor for Instructor for College Mathematics (MAT 142)   Spr2011
- Instructor for 2 Intermediate Algebra (MAT 122) courses at ASU West   Fall2010
- Instructor for Intermediate Algebra (MAT 122)   Sum II 2005

ESOL Instructor, Center for Learning, Glendale Community College   5/2005-11/2005
- Instructor for Advanced I and Advanced II English for Speakers of Other Languages (ESOL)
- Explained and followed step by step activities including how to write topic sentences with specific supporting details and how to construct paragraphs and essays with correct English grammar, tenses and punctuation use
- Taught how to formulate formal complaints in speech and writing using modals of request, ability, and need
- Engaged students in group conversations, practiced American idioms, used parallel structures, auxiliaries, phrasal verbs, gerunds, infinitives, adverb clauses and phrases, noun clauses and phrases, and direct and indirect speech

Adjunct Faculty Instructor, Department of Computer Science and Mathematics, Mesa Community College
                                                                                      1/2003-7/2005
- Instructor for Digital Design Engineering Fundamentals Course (CSC120). Co-developed course materials and examples related to digital design concepts and architecture; developed course projects. (5 semesters)
- Instructed and advised undergraduate students in fundamental algebra mathematical skills. (2 semesters)
- Instructor for Basic Mathematics Course (MAT082) (2 semesters). and Intermediate Algebra Mathematics (MAT092) (2 sections)
- Attended professional workshop and departmental activities

PRIOR UNIVERSITY TEACHING EXPERIENCE

Faculty Associate (Adjunct), School for Engineering of Matter Transport and Energy   1/2013-5/2016 ***Arizona State University***
- Instructor for Introduction to MATLAB (MAE 215)
- Instructor for Computer-Aided Engineering I (MAE 214)
- Instructor for The ASU Experience (ASU 101)
- Instructor for Introduction to Engineering (FSE 100)

Teaching Assistant for Mechanical and Aerospace Engineering course 100   8/2009 – 12/2009
- Laboratory Instructor for introductory mechanical engineering course at Arizona State University
- Responsible for teaching students MATLAB (Matrix Laboratory), an essential engineering tool
- In charge of coordinating solar car project for 220 students and organizing competition

Faculty Associate for Arizona State University Center for Research on Education in Science, Mathematics, Engineering, and Technology (CRESMET) 8/2006-12/2006 AND 1/2008-5/2008
▪ Instructor for Integrating Math, Science & Engineering (MTE598)
▪ Instructional consultant in course weekly meetings

Faculty Associate, Department of Mechanical and Aerospace Engineering Arizona State University, Tempe, Arizona 8/2005 – 5/2007
▪ Instructor for MAE100 laboratory, a computer programming laboratory where I taught students MATLAB in Spring 2007
▪ Instructor for Mechanical & Aerospace Engineering (MAE 100) in Fall 2006
▪ Instructor for Intermediate Engineering Design (ECE 300) in Summer 2006
▪ Instructor for Introduction to Engineering (ECE 100) in Fall 2005 and Spring 2006

Teaching Assistant, Bioengineering Department at Arizona State University, Tempe, Arizona 1/1999 - 5/1999
▪ Hardware expert for BME 470 microcomputer applications lab
▪ Instructed students in the use of LabView, Electronics workbench, and circuit design and implementation
▪ Supervise assembly and testing of electrical circuit designs
▪ Successfully managed lab facility for department; ordered new equipment, supplies, designed test benches and facilitated delivery (submitted engineering diagrams directly to supplier)
▪ Collaborated on design and administration of lab practical exams

OTHER PROFESSIONAL EXPERIENCE

Authored Three Courses and Two Lessons for Solidprofessor.com 5/2016-Present
▪ Designed and Created the online MATLAB Advanced Concepts course for Solidprofessor.com
▪ Designed and Created the online MATLAB Essentials course for Solidprofessor.com
▪ Designed and Created the online Introduction to MATLAB course for Solidprofessor.com
▪ Designed and Created two online MATLAB Lessons in response to user-submitted questions

Grant Writer and Engineer for Phytofilter Technologies, Inc. 11/2015-12/2017
▪ Wrote and submitted DOE SBIR grant for Phytofilter Technologies, Inc.
▪ Research work for Phytofilter Technologies, Inc.

Consultant for 3D Printer Project for Glendale Community College Professor Dan Cortney 12/2014-5/2015
▪ Built and programmed (G-code) two 3D printers for Glendale Community College
▪ Tested and utilized a 3D printer for a CAD class at Arizona State University

Research Assistant for NSF funded Data Center Project 8/2009 – 5/2014
▪ Lead researcher and author of scientific articles published in Energy Conversion and Management scientific journal
▪ Collaborator on NSF funded DataCenter Cooling project at ASU
▪ Lead author of ITHERM paper and presenter at ITHERM 2010 Conference
▪ Researching innovative and efficient cooling topologies
▪ Coordinating and conducting meetings with colleagues
▪ Developing and presenting ideas and concepts to faculty and fellow research associates

▪ Leading experimental progress on project development

Founder of SigmaSolar Research   2/2009 – 8/2009
▪ Researching, developing and prototyping a new generation of mid-sized solar parabolic receiver
▪ Collaborated with team at Arizona State University to conduct SigmaSolar research and experiments

Chief Engineer, Physics Lab of Lake Havasu, Arizona   6/2008 – 6/2010
▪ Focused on innovative and practical science and engineering applications in the fields of both renewable and sustainable energy
▪ Researched small scale solar thermal systems to serve as auxiliary power source;
▪ Advocated company's vision and partner with industry and individuals to utilize renewable and sustainable energy for automotive application;
▪ Professional promotion of our cutting-edge technology through our presence at tradeshows (SEMA, SAE)

Engineering Intern, Phoenix Analysis & Design Technologies, Inc., Tempe, Arizona   3/2007 – 5/2008
▪ Broad engineering experience with electrical, chemical, mechanical design, cost analysis, implementation, documentation, testing and manufacture
▪ Engineering Project Leader for *three* successful experimental setups for product development

Web Master, Center of Solid State Electronics Research, ASU, Tempe, Arizona   12/99 – 1/2003
▪ Created and maintained department web site using FrontPage and MS Access
▪ Planned and implemented web site security firewall measures to ensure department intranet security
▪ Project leader of a customized on-line process that improved cleanroom efficiency
▪ Editor of department newsletters, responsible for providing Annual Reports
▪ Lead team project to implement an automated web based on-line process for the department. *This resulted in time-savings and a streamlined department process*
▪ Lead Beta testing of web based services, trained staff in implementation, and documentation

Research Assistant, Arizona State University, Tempe, Arizona   1/1998 - 12/1998
▪ Assisted with sensor project utilizing radioactive isotope for glucose level measurements
▪ Assembled and test electrical circuit designs
▪ Designed, fabricated, assembled, and tested PCBs
▪ Responsible for interfacing sensors to a microcontroller

Field Service Engineer at Motorola, subcontracted to Vanstar, Phoenix, Arizona   8/1996 - 12/1996 ▪
Provided engineering field service support services for PC and Macintosh computer platforms
▪ Installed networking hardware and software
▪ Supported computer network troubleshooting
▪ Extensive troubleshooting and working with WAN
▪ Experience with token ring and Ethernet configurations
▪ Excellent interpersonal relations with customers
▪ Often customized programs for customers

Computer Site Associate V, Information Technology   5/1993 - 8/1996
 Arizona State University West, Phoenix, Arizona
▪ Provide support services for DOS and Macintosh computers

- Initiated and developed programs (e.g., batch files) to facilitate software installations
- Provided extensive support services for installing and troubleshooting LAN and Ethernet networking hardware and software
- Excellent interpersonal relations with customers
- Often customized programs for customers

Programmer Assistant IV, Disability Resource Center, Arizona State University West, Phoenix, AZ *4/1993 - 7/1993*

✦ Completed laptop project
✦ Created and implemented batch files
✦ Learned FoxPro 2.0 programming language to complete several projects
✦ Electronic equipment setup and maintenance

Engineer Aide, Honeywell Satellite Systems, Glendale, Arizona   11/1990 - 6/1991

- Learned Mentor CAD on Sun workstations
✦ Created engineering schematics using Mentor CAD for data control systems

PROFESSIONAL DEVELOPMENT

Algebra Instruction at Community Colleges (AI@CC): An Exploration of its Relationship with Student Learning and Performance Workshop   02/01/2020

- 6 hour workshop at Glendale Community College

Continuing Adjunct Faculty Education (CAFE) Credits

- New Brain Research (in progress)
- Basic Video Production (in progress)
- Makerspace Design: Using the EMCC STEAM Engine Professional Learning Community (PLC) Workshop (Spring 2020)
- Creating a Canvas Lesson Using a New App: Getting Apps to Work for You Part 2 (Spring 2020)
- New Approaches in the Classroom (Fall 2019)
  - [tech]Teach: Getting Apps to Work for You
  - Inclusion of Art Across the Curriculum
- EMC Fall 2019 Advanced Canvas Course (Certificate & Advanced Canvas Badge Awarded)

Completed online EM 2019 FALL-CAD100 12150 (AutoCAD) with a score of 100%

AWARDS, RECOGNITIONS & Certifications

- Valedictorian, Bourgade High School, 1989
- Magna Cum Laude, Arizona State University, BSE, 1995
- CSWA (Certified Solidworks Associate), 2016
- Two Technical Certifications in AutoCAD, 2019
- ESD Certification at Motorola, 1996
- American Heart Institute Interventional Research Internship Program Completion Award

- Arizona State University Faculty Award
- Maricopa Community Colleges Adjunct Faculty Award and Honorary Pin
- Arizona State University Graduate Scholarship, Spring 2007
- JACMET (Joint Alliance of Companies Managing Education for Technology) Project Metrics Certificate of Completion and First Place Project Award
- Second Place in the National Underwater Robotics Competition, Summer 2007
- First Lego League Championship Tournament Judging Medallion, Spring 2008

LIST OF REFERENCES

Andrew Burch	Mathematics Department Chair EMCC		andrew.burch@estrellamountain.edu
Jason Wright	Solidprofessor		jwright@solidprofessor.com
Martin Mittelmark	President and CEO	Phytofilter, Inc.	martinmittelmark@gmail.com
Dr. Patrick Phelan	Chair of PhD Committee	ASU	phelan@asu.edu
Dr. Steven Trimble	Professor of Practice	ASU	steven.trimble@asu.edu
Dr. Stefan Myhajlenko	CSSER Assoc. Director	ASU	myhajlenko@asu.edu
Paula Cheslik	Engineering Program Director GCC		paula.cheslik@gcmail.maricopa.edu
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Dr. Ron Roedel	Emeritus Professor	ASU	r.roedel@asu.edu

PAST ORGANIZATIONS/AFFILIATIONS

SAE -Society of Automotive Engineers

ITHERM - Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems

IMAPS - International Microelectronics And Packaging Society

IEEE - Institute of Electrical and Electronics Engineers (technology advancement organization) Engineers Without Borders

Spring 2008 Faculty Advisor for WISE: Women in Science and Engineering

PUBLICATIONS

- Haywood, A; Sherbeck, J; Phelan, P; Varsamopoulos, G; Gupta, SKS. "The relationship among CPU utilization, temperature, and thermal power for waste heat utilization," *ENERGY CONVERSION AND MANAGEMENT*, v.95, 2015, pp. 297-303. doi:10.1016/j.enconman.2015.01.088
- Haywood, A; Sherbeck, J; Phelan, P; Varsamopoulos, G; Gupta, SKS. "Investigating a Relationship among CPU and System Temperatures, Thermal Power, and CPU Tasking Levels," *Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm), 2012 13th IEEE Intersociety Conference on*, 2012, 821-827. doi: 10.1109/ITHERM.2012.6231511

- Haywood, A; Sherbeck, J; Phelan, P; Varsamopoulos, G; Gupta, SKS. "Thermodynamic feasibility of harvesting data center waste heat to drive an absorption chiller," *ENERGY CONVERSION AND MANAGEMENT*, v.58, June 2012, pp. 26-34. doi:10.1016/j.enconman.2011.12.017

- Gupta, SKS, Varsamopoulos, G, Haywood, A, Phelan, P, and Mukherjee, T. "BlueTool: Using a computing systems research infrastructure tool to design and test green and sustainable data centers", 08/01/201007/31/2011 , Ishfaq Ahmad and Sanjay Ranka *Handbook of Green Computing*, 2011, "CRC Press".

- Haywood, A; Sherbeck, J; Phelan, P; Varsamopoulos, G; Gupta, SKS. "A Sustainable Data Center with Heat-Activated Cooling," *Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm), 2010 12th IEEE Intersociety Conference on*, 2010. doi: 10.1109/ITHERM.2010.5501334