

ABHIJIT KHARE

Wanner 140 P

College of Integrative Sciences and Arts

Math and Science Division

Arizona State University, Polytechnic campus

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Teaching**Experience: College of Integrative Sciences and Arts**

(Arizona State University, Polytechnic campus)

Instructional Professional (FSC, Applied Physics) (July 2017 – Present)

Courses taught/teaching: Introductory physics, general physics (algebra and trigonometry based) and university physics (calculus-based *Mechanics* and *Electricity and Magnetism*) lab courses and general physics and university physics recitation classes.

Job duties: To instruct and conduct lab sessions, to set-up and take-down of lab experiments each week, to grade lab reports, to develop laboratory manual, to modify and design new experiments, to teach recitation classes, to attend faculty meetings, to hold student office hours, to attend workshops, seminars, lecture series, and to conduct and attend other educational outreach events and activities.

BASIS Ahwatukee, Phoenix, AZ (July 2013 - May 2017)*Honors and AP Physics Teacher* (8th – 12th grade)

Courses taught/teaching: 8th grade Physics, Honors and AP Physics (algebra and trigonometry based) for the upper school. Other job duties include mentoring science club activities such as science bowl, teach and conduct academic lab sessions for the 8th and upper grade students who need additional support in math and physics.

School of Letters and Sciences; Arizona State University (Polytechnic Campus)

Mesa, AZ

Faculty Associate (Physics) (Contract position: Jan 2013 – May 2013)

Have taught one section of General Physics I (PHY 111) and two sections of University Physics I (PHY 121) recitation courses.

MARICOPA COMMUNITY COLLEGES, AZ (Current Position)

Adjunct Faculty (Physics), **Gateway Community College**, Phoenix, AZ
(Jan 2015 – May 2020)

Course(s) taught/teaching:

Introduction to Physics (PHY 101), both in-person as well as online.

Adjunct Faculty (Physics), **Paradise Valley Community College**, Phoenix, AZ
(May 2011 - Present)

Course(s) taught:General Physics (PHY 111), University Physics I and II (PHY 121; PHY 131),
Introductory Physics (PHY 101), both in-person as well as online.

Adjunct Faculty (Physics/Math), **Phoenix College**, Phoenix, AZ.
(Aug 2000 - May 2014)

Course(s) taught:

University Physics (I & II), General Physics (I), Math Concepts & Applications
Adjunct Faculty (Physics), **Scottsdale Community College**, Scottsdale, AZ.
(Jan 2006 - Dec. 2013)

Course(s) taught:

General Physics (I), General Physics (II), Introduction to Physics

Adjunct Faculty (Mathematics), **South Mountain Community College**, Phoenix, AZ.
(August 2000 – May 2003)

Course(s) taught:

College Algebra (MAT 151), Basic Arithmetic and Review, Intermediate Algebra (MAT 122)

Adjunct Faculty (Mathematics), **Phoenix College**, Phoenix, AZ
(Aug 2001 – May 2014)

Course(s) taught:

College Algebra, Math Concepts and Applications (MAT 102)

Adjunct Faculty (Physical Sciences), **Mesa Community College**, Mesa, AZ.
(August 1999 – July 2002)

Course(s) taught:

Introductory Physics (PHY 101), Introduction to Physical Science (PHS 110)

Adjunct Faculty (Math and Science), **Chandler-Gilbert Community College**,
Chandler, AZ. (August 1998 – December 1999)

Course(s) taught:

Intermediate Algebra, Basic Arithmetic, Introduction to Physics (PHY 101)

DeVry University, Phoenix, AZ

Adjunct Faculty (Math) (Contract period: October 2008 – April 2009)

Job duties include teaching Pre-calculus for undergraduate students enrolled in DeVry's technical education (Computer Gaming and Simulation) program, and to use MyMathLab educational software to grade and evaluate student assignments.

Ottawa University, Phoenix, AZ.

Adjunct Faculty (Math & Liberal Arts), (March 2004 – Dec 2007)

Courses taught:

College Algebra, Pre-Calculus, Calculus (I, II, & III), Differential Equations,
Linear Algebra, Introduction to Physical Science as an eight-week course.

Job responsibilities:

- To instruct and develop a curriculum for a diverse population of students in a physics and mathematics classroom.
- To teach recitation sections for General Physics and University Physics classes for a diverse student population.
- To evaluate and measure the subject knowledge content of material taught in classroom, and to maintain student scholastic record through exams and assignments.
- Obtain a student feedback related to my course instruction for each semester.
- Conduct a physics lab session (traditional as well as computer based) by introducing computer data acquisition tool such as Pasco Scientific Capstone program, CBL (Calculator-based Lab) or MBL (Microcomputer Based Lab) set-up in various kinds of physics experiments by use of computers equipped with Graphical Analysis program.
- Remain current with new teaching styles and trends introduced in physical sciences and math by attending conferences, faculty training and development workshops, and seminar.
- Maintain student appointment and meeting hours to provide course related assistance and advisement to students.
- Serve and participate in department, college and district-wide educational activities and committees.
- Teach math and physical science for students taking the course in a directed-study format.
- To assist and help physics students with their development of problem-solving skills for various physics courses at college and university level. To conduct recitation sessions where there is a direct interaction with physics students working on problems and homework.

Tutoring

Experience:

SCOTTSDALE COMMUNITY COLLEGE, Scottsdale, AZ (August / 2005 – May / 2013)

Student Learning Facilitator (Level III) in Math and Physics at Math & Science Center

PHOENIX COLLEGE, Phoenix, AZ (August / 2000 – May / 2006)

Learning Center Specialist for Math and Science Center

RIO SALADO COLLEGE, Tempe, AZ (August / 1996 – May / 2004)

Block/Online Tutor in Math/Physics/Chemistry for Student Services

Job responsibilities:

- Assist and help students in understanding difficult concepts, and develop problem solving skills in topics like college algebra, calculus, trigonometry, introductory and advanced level physics classes. To tutor physics and math for students enrolled in health care, nursing and technical degree programs.
- Facilitate a TI-graphing calculator literacy session each semester for the students taking a college algebra class, as well as for math teachers revising and updating their graphing calculator knowledge.

Research

Experience: **Center for Solid State Electronics Research, Arizona State University, Tempe, AZ**
Research Experience for Teachers Fellowship (Aug 2014 – Feb 2015)

Have completed the summer research training program (7 weeks) for high school and community college teachers in the field of nanoscience and technology. Job duties include to develop instructional materials and lesson plans based on the information and data obtained from the research work in collaboration with graduate and doctoral students working at ASU's Nano-Fab facility, and to introduce those into the physics curriculum at high school and community college level. Final submission of project was presented at the seminar held at Georgia Institute of Technology, Atlanta, GA.

Project title: *Making Connections with Nanotechnology.*

Biodesign Institute, Arizona State University (main campus), Tempe, AZ
Research Experience for Teachers Fellowship (June 2021 – Present)

Currently participating in a RET (Research Experience for Teachers) program for the summer 2021 to be held for a period of ten weeks.

Program description: To participate in a summer research program as a community college faculty by joining the CXFEL (Compact X-ray free electron laser) research group currently working CXFEL device use and its fabrication to engage in novel science exploring the structure and dynamics of nature and materials. The research training program is to be conducted in-person as well virtually.

Project Name: *Optics Design to focus a laser spot to sub-500 nm onto the surface of a half-ball lens.*

RET Mentor: Dr. Siddharth Karkare
Assistant Prof. of Physics
College of Liberal Arts and Sciences,
ASU (Main campus)
Tempe, AZ

UNIVERSITY OF JODHPUR, Department of Physics, Jodhpur, (Raj.), India.
Junior Research Fellow (Physics) (December /1994 – May /1995)

Project Title: *Fabrication and Study of Thin-Film Solar Cells using Organic Semiconductor Material.* (Funded by the Dept. of Science and Technology, New Delhi, India.)

Research Guide: Dr. G. D. Sharma
Assist Prof. of Physics
JNV University Jodhpur
Jodhpur, India

Job responsibilities:

- To assist the department faculty in conducting research work in photo conducting thin film solar cells, using organic photo-conducting dyes and compounds. To design thin

films with coating of organic dyes and applying vacuum deposition technique to fabricate and prepare solar cells.

- Perform photo-conductivity tests on manufactured solar cells and to determine the work efficiency. To assist in publishing articles and journals related to the research project.

Education: UNIVERSITY OF INDORE, (Devi Ahilya University) Indore, India.

Master of Science degree in Physics (School of Physics, Dec. 1994)

Coursework:

Classical Mechanics, Quantum Mechanics, Nuclear Physics, Solid State Physics, Atomic Physics, Mathematical Physics, Plasma Physics, Laser Physics, Statistical Mechanics, Digital Electronics, and Statistics and Probability (*Interdisciplinary course*).

Math-related courses: Mathematical Physics (2 semester hours), Statistics (2 semester hours)

Thesis Work (Non-linear optics):

Study of Optical Phase Conjugation phenomena in some non-linear optical solids.

Bachelor of Science degree in Physics (*Honors Program*, Dec. 1992)

Coursework:

Solid State Physics, Nuclear Physics, Electronics, Mathematical Physics, Numerical Methods and Analysis, and Quantum Mechanics.

Math-related courses: Mathematical Physics, Numerical Methods (20 semester hours)

UNIVERSITY OF ARIZONA, Optical Sciences Center, Tucson, AZ.

(January /2003 – May /2005)

Have completed additional graduate level course work in *Optics*, through the distance learning program, as a *non-degree* student.

Coursework:

Fourier Optics, Electromagnetic Waves, Optical Design and Instrumentation, Laser Physics, Diffraction and Interferometry, Radiometry and Optical System Aberrations.

Computer

Experience:

- Microsoft Office and Windows Application
- Internet Explorer, Firefox, and other internet browsers
- Computer data acquisition tool such as Vernier, Pasco Scientific, Logger-Pro,
- Real-Time Physics, and, Graphical Analysis, for laboratory physics.

Professional Certifications:

- Arizona State Community College Teaching Certificate (EDU 250 course taken).

Educational Activities and Certificate of Participation:

- Have participated in an Inquiry-Based Learning workshop (2 weeks) for math and physics faculty, using technology into the classroom, held at Mesa Community College, Mesa, AZ.
- Certificate obtained for participation in IN-VSEE (Interactive Nano-Visualization in Science and Engineering Education) workshop and the SPM (Scanning Probe Microscope) live operation for physical science and engineering faculty held at Arizona State University, Tempe, AZ.
- Have completed three semester hours (86 contact hours) of *Modeling Workshop in electricity and magnetism*, (PHS 531, Methods of Physics Teaching) for high school and community college physics teachers, at Arizona State University, Tempe, AZ.
- Have attended and successfully completed the EDGE adjunct faculty workshop at Paradise Valley Community College, Phoenix AZ.
- Have participated in two-day webinar conducted by Pasco Scientific for “*Advanced Physics Apparatus and Experiments in Optical Physics*”.

Volunteering and Service:

- Have participated as a Grand Awards Judge for the Regeneron ISEF (International Science and Engineering Fair) 2021 and have judged a total of six projects in Physics (Classical Mechanics), submitted by high school students from all over the world.
- Have conducted a three-hour physics workshop for high school students enrolled in ASU summer AVID camp.
- Have participated in ASU Open Door Event (in person as well as virtual) and developed a small video on preparing sling shot rockets guide and demonstration for elementary school children.

Professional Membership: American Association of Physics Teachers (AAPT)

Honors/Awards: Have been recognized as an *Outstanding Adjunct Faculty* for a 10 years of service in teaching physics, professional development activities, creative and innovative learning strategies at Phoenix College.

