

## Carl T. Rutledge, Ph. D.

Linscheid Distinguished Professor and Chairman, Dept. of Physics,  
East Central University, Ada, OK 74820

Telephone (580)-559-5392

email: crutledge@mac.com

Home: 2009 East 11th St., Ada, OK 74820-7006

### Education:

B. S., 1966 University of Arkansas (Fayetteville): Physics & Math with honors

M. S., 1969 University of Arkansas (Fayetteville): Physics

Ph. D., 1971 University of Arkansas (Fayetteville): Physics

### Teaching Experience:

1981- East Central Univ. (Ada, OK): Physics, astronomy, computer science,  
mathematics

1970-81 Southern Arkansas University (Magnolia): Physics and Astronomy

### Administrative Experience:

1992- Chairman, Department of Physics, East Central University

1983- Director of Judging, Oklahoma State Science Fair

1980-81 Head, Department of Physics, Southern Arkansas University

1977-81 Director, Arkansas State Science Fair and  
President, Arkansas Science Fair Association

### Publications:

4 books, 12 articles and letters, 1 book review

### Papers presented:

Over 25, on astronomy education, physics education, microcomputers.

### Grants, special projects and programs:

1994- Director and Co-PI, NSF LS-OKAMP grant for minorities at ECU

1994-2008 Director of eight NSF Eisenhower Teacher Education workshops for teachers

1991-93 Co-Director and teacher, Summer Academy for High School Students in  
Oklahoma Natural Resources and Astronomy

1971-93 Worked in or taught in at least 10 workshops for teachers and/or students

**Organizations:** Past president of the Arkansas-Oklahoma-Kansas section of the  
American Association of Physics Teachers.

### Honors:

David and Mollie Boren Outstanding Oklahoma Mentor Award, January, 2014

Adolph Linscheid Distinguished Teaching Professor - 2004-

ECU Teaching Excellence Award – 1998 and 2010

1997 Oklahoma Science Teachers' Association Higher Education Teacher of the Year

Phi Beta Kappa, University of Arkansas

Sigma Xi Research Honor Society

NORRED EXHIBIT 2298 - Page 1  
Medtronic, Inc., Medtronic Vascular, Inc.,  
& Medtronic Corevalve, LLC

**Vita: Carl T. Rutledge, Ph. D.**

Professor and Chairman, Department of Physics

Adolph Linscheid Distinguished Teaching Professor

Undergraduate and Graduate faculty

**1. Academic Degrees:**

B. S., 1966 University of Arkansas (Fayetteville): Physics & Math with honors

M. S., 1969 University of Arkansas (Fayetteville): Physics

Ph. D., 1971 University of Arkansas (Fayetteville): Physics

**2. Professional Experience:**

1981- East Central Univ. (Ada, OK): Physics, astronomy

1980 William Jewell College (Liberty, MO): Physics (summer)

1974-75 Stephen F. Austin State Univ. (Nacogdoches, Texas):  
Physics and Astronomy Education (summers)

1970-81 Southern Arkansas University (Magnolia): Physics and Astronomy

1963-70 University of Arkansas (Fayetteville): Physics (Student/graduate assistant)

**3. Faculty and Administrative Load**

Nominal 12 hour load of teaching, plus Chairman of Department of Physics,

**Courses Taught:**

Astronomy, General Physical Science, General Physics I/II, Engineering Physics I and II, Electricity & Magnetism, Optics, Electronics, Thermodynamics, Modern Physics, Cosmology, and many teacher workshops in physics.

**4. Organizations:**

American Association of Physics Teachers (Arkansas-Oklahoma-Kansas Section):  
Member since 1966. Past Secretary-Treas., Vice-President, and President.

Oklahoma Louis Stokes Alliance for Minority Participation in Science, Engineering  
Mathematics and Technology: Charter member and Reporter (Secretary.)

Oklahoma Science Teachers' Association (OSTA)

**5. Professional Assignments and Activities**

- 2009 Helped organize and host the Physics Centennial Reunion during homecoming, 2009. About 30 former graduates attended, including some from the 1960's.
- 1994- Co-Principal Investigator of the Oklahoma Alliance for Minority Participation in Science, Engineering, Mathematics and Technology for ECU and Campus Coordinator for the ECU group.
- 1999- McNair Scholar Mentor
- 1992- Chairman, Department of Physics, East Central University
- 1983- Director of Judging, Oklahoma State Science and Engineering Fair
- 1980-81 Head, Department of Physics, Southern Arkansas University
- 1977-81 Director, Arkansas State Science Fair and  
President, Arkansas Science Fair Association

## 6. Publications:

At least 4 books, 12 articles and letters, 1 book review. Details follow.

### Papers published include:

"Workshop in Science Ethics" by Karen Williams and Carl T. Rutledge in CURQ Vignettes: Additional Examples of Ways to Teach Undergraduate Ethical Research Conduct, Council on Undergraduate Research Quarterly. 2010, Vol. 30, #3.

Mann, Jennifer, Williams, Karen, & Rutledge, Carl, "Learning Approaches, Course Experience, and Astronomy Understanding in The Oklahoma Project", *Journal of College Science Teaching*, Vol. XXVII, No. 4, pp. 240-244 (February, 1998)

and 6 other older papers.

### Books include:

Rutledge, Carl T., and Weems, Bruce, *Experiments and Observations in Astronomy, 5th Ed.*, East Central University Physics Department (2012) (This 108 page lab manual is used in the ECU astronomy course.)

Plus 6 other lab manuals.

## 7. Papers presented:

Recent presentations include:

Rutledge, Carl T., "Teaching Moon Phases: A Multiple Method Approach", poster presentation, American Association of Physics Teachers National Summer Meeting, University of Pennsylvania, Philadelphia, Pennsylvania, July 30, 2012

Rutledge, Carl T., "Using the Coronado Personal Solar Telescope for Astronomy Outreach", poster presentation, Arkansas-Oklahoma-Kansas Section of the American Association of Physics Teachers meeting at the End branch of Northwestern Oklahoma State University, October 3, 2012.

Williams, K. & Rutledge, Carl T. (2012). "Career Paths of ECU Physics Graduates", oral presentation at AR-OK-KS Section of the American Association of Physics Teachers Meeting at Northwestern OK State University, Enid, OK, 11/3/12.

Rutledge, Carl T., "Galileo and His Telescope: Observations and Impact", Lindscheid Library presentation for ECU students and faculty in celebration of the International Year of Astronomy and the 400th anniversary of Galileo's first use of the telescope, ECU Library, October 20, 2009

Rutledge, Carl T., "Using the Galileoscope in Introductory Astronomy Classes"; National Science Teachers of America regional meeting, Kansas City Missouri, October 29, 2010 (Workshop for secondary and college teachers. )

Rutledge, Carl T., "Using the Galileoscope in Introductory Astronomy", oral presentation at the Arkansas-Oklahoma-Kansas section of the American Association of Physics Teachers (AOK AAPT) regional meeting at Kansas State University in Manhattan, KS, October 10, 2009

Rutledge, Carl T., "Videos in Introductory Astronomy: Student Opinions", poster presentation at the AOK-AAPT regional meeting at Kansas State University in Manhattan, KS, October 10, 2009

Rutledge, Carl T., "On Being a Scientist", condensed one hour non-interactive ethics presentation in the Noble Research Center at OSU for about 30 majors and faculty attending the OSU Research Symposium the Louis Stokes Alliance, October 3, 2009 (Invited repeat updated presentation.)

Rutledge, Carl T., "Low Cost Experiments and Demonstrations for High School Physics", workshop presented at the AOK-AAPT meeting at Rose State October 31, 2008

Rutledge, Carl T., "Student Proof, Accurate Experiments with Lamps in Series and Parallel for General Physical Science", oral presentation at the AOK-AAPT regional meeting at Rose State Nov. 1, 2008

Williams, Karen, and Rutledge, Carl T., "On Being a Scientist", a 2 hour ethics interactive workshop presentation in ESTEP auditorium at ECU for over 50 science majors and faculty, January 22, 2008

Plus many other former presentations on astronomy education, physics education and microcomputers.

## **8. Research**

Current research has been in physics and astronomy education, including ways to implement results of current research in teaching into college and high school physics, physical science, and astronomy teaching.

A recent project was a special Eisenhower grant for the summer and fall of 2002 entitled Modeling Effective Teaching in the Physical Sciences and was attended by 16 college and junior

college teachers from around the state. They learned about the learning cycle, inquiry methods, modeling, beyond question, and other methods and applied them to their classes in the fall.

Another project involved construction and use of an observatory for our Celestron 14 inch telescope. A student worked with this telescope for honors and East Central Alliance for Minority Participation (ECAMP) research during the summer of 2003.

Dr. Rutledge has also mentored students in the ECAMP program for minorities in Math, Science, Engineering and Technology in summer research in the areas of acoustics, electronics and astronomy.

### **Grants, special projects and programs:**

24, mostly Eisenhower grants to improve teaching in the public schools, as well as eighteen years of grants with the Oklahoma Alliance for Minority Participation in Science, Engineering, Mathematics and Technology (LS-OKAMP or ECAMP). (Co-PI for the Oklahoma Alliance). LS-OKAMP grants alone have totaled over \$500,000 over the years with over 60% of this money going directly to students for stipends and research. Over 181 ECU students have participated.

During the summer of 2008 Dr. Rutledge was a co-teacher in the workshop "Physical Science of Pontotoc County" for 40 teachers of grades 4-8. The workshop was funded by the No Child Left Behind program, Title II, Part B. Total funds from NCLB were \$160,225. Participants learned about physics, astronomy and earth science and how to apply the learning cycle and inquiry methods when teaching these subjects.

### **9. Honors**

David and Mollie Boren Outstanding Oklahoma Mentor Award, January, 2014

Received ECU Teaching Excellence Award in 2010

Adolph Linscheid Distinguished Teaching Professor - ECU - 2004-present

ECU Teaching Excellence Award - 1998

Oklahoma Higher Education Teacher of the Year award from the Oklahoma Science Teachers' Association - 1997 (statewide award)

Sigma Xi research honor society (University of Arkansas)

Phi Beta Kappa (University of Arkansas)

Sigma Pi Sigma physics honor society