

Aaron P. Titus

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EDUCATION

BS in Physics, Pennsylvania State University, May, 1993.

Ph.D. in Physics, North Carolina State University, July, 1998. Dissertation: Integrating Video and Animation with Physics Problem Solving Exercises on the World Wide Web (Advisor: Robert J. Beichner).

PROFESSIONAL EXPERIENCE

Assistant Professor, High Point University (8/02 – present)
Assistant Professor, North Carolina A & T State University (8/98–5/02)

Teaching

Calculus-based physics: Incorporated interactive web-based technology using WebAssign and Physlets; developed curricular material based on *Matter & Interactions*.

Astronomy: Developed PowerPoint lectures and curricular material for introductory astronomy for non-science majors.

Circuits: Developed curricular material for introductory electric circuits.

Microelectronics: Developed a course in microelectronics.

Physics for elementary school teachers: Taught physics to K-5 teachers for NC-PIMS (North Carolina Partnerships in Math and Science) using materials from *Physics By Inquiry* and *Powerful Ideas in Physical Science*.

Research

Integrating Multimedia with Physics Problems: Development and research of multimedia-focused problems where students are required to take data from an animation to solve a given problem.

WebAssign: Co-developed with Larry Martin of North Park University a large-scale web-based assignment delivery, collection, and grading system used at a large number of high schools, colleges, and universities. WebAssign is owned by North Carolina State University and licensed to Advanced Instructional Systems.

Animated Test of Motion: Developed the an animated test for measuring students' understanding of two-dimensional kinematics.

Assessment Analysis: Co-developed a web-based application for performing statistical analysis of assessment results.

Scientific Modeling: Development and research of lab exercises in physics and astronomy that help students learn scientific modeling.

Consulting

On-line School Services Database: Created a searchable database of faculty services and expertise areas for service to K-12 schools, for the School of Education at North Carolina A & T. The web-based application includes faculty activity reports and administrative summary reports of activities.

NC Standard Course of Study Database: Created a searchable database of web sites and their associated NC Standard Course of Study Objectives. The application allows teachers to search web sites according to the NC course objectives.

PUBLICATIONS

Book and Chapters

Herman, R. M. & Titus, A. (Eds.) (1993). *General Physics 202/204 Laboratory Manual*. Dubuque, IA: Kendall/Hunt Publishing Company.

Herman, R. M. & Titus, A. (Eds.) (1993). *Introductory Physics 215/265 Laboratory Manual*, Dubuque, IA: Kendall/Hunt Publishing Company.

Martin, L. & Titus, A. (1999). Communication. In Novak, G., Patterson, E., Gavrin, A., & Christian, W., *Just-in-time-teaching: blending active learning with web technology* (p. 157-169). Upper Saddle River, NJ: Prentice Hall.

Titus, A & Dancy, M. (2001). PER and Physlets. In Christian, W., & Belloni, M., *Physlets: Teaching Physics with Interactive Curricular Material*. (p. 25-37). Upper Saddle River, NJ: Prentice Hall.

Contributing author for Christian, W. & Belloni, M. (2004). *Physlet Physics: Interactive Illustrations, Explorations, and Problems for Introductory Physics*. Upper Saddle River, NJ: Prentice Hall.

Proceedings and Journal Articles

Titus, A., Martin, L., & Beichner, R. (March/April, 1998). *Web-based Testing in Physics Education: Methods and Opportunities*, **Computers in Physics 12**, 117-123.

Christian, W. & Titus, A. (May/June, 1998). *Developing Web-based Curricula Using Java Physlets*. **Computers in Physics 12**, 227-232.

Bonham, S., Beichner, R., Titus, A., and Martin, L. (2000). *Education research using web-based assessment systems*. **J. Res. on Computing in Education 33**, 28-45.

Tang, G., Titus, A. (2002). *Increasing Students' Time on Task in Calculus and General Physics Courses through WebAssign*. **Proceedings of the 2002 ASEE Conference and Exposition**.

Reviews and Other Works

Titus, A. (1990). Can an Ethical Person Succeed in the Modern World? In *Kearse Distinguished Lectures, Kearse Award Papers, Student Essay Contest Papers*, 186-190. Rochester, NY: Wallace Memorial Library, RIT.

Titus, A. (1995). Review of *Using Interactive Video in Education* by P. Semrau and B. Boyer. Allyn & Bacon, *Educational Technology Review*, 4, 41-42.

Titus, A. (Spring, 2001). Not so random thoughts about Web-based homework. *A&T Today*, 4, 2, 24-25.

Commercial Web Sites

Titus, A., and Christian, W. (1998). Physlet problems: chapters 1-8 on the companion web site for *Physics: Principles and Applications*, Fifth Edition, by Douglas C. Giancoli. (<http://cw.prenhall.com/giancoli/>).

Educational Software and Web Sites

North Carolina Internet Learning Initiative (Titus, A. and Cobitz, C.): Created an on-line tutorial system where pretest, posttest, and quiz questions are linked to North Carolina Standard Course of Study Objectives for K-12. Authors create tutorials in HTML and provide links to pretests, quizzes, and posttests in the NCILI database. Teachers login and add the tutorials to their classes. Students login and do the tutorials. Their progress is recorded. Teachers can view reports of student records.

History Hopper (Titus, A. and Cobitz, C.): Created an on-line database where students submit records of North Carolina history markers. The database is searchable and can be used by teachers of technology for teaching principles of databases to elementary school students.

Assessment Analysis (Hinds, O. and Titus, A.): Created web-based software to analyze test data and educational data and calculate statistics and correlations. (<http://www.highpoint.edu/~atitus/>)

GRANTS

1. Principal Investigator of "WebAssign–Delivering, Collecting, and Grading On-line Homework," Industry Cluster Grant, North Carolina A & T State University, 1998. (Funded, \$1000).
2. Co-Investigator of "Talent-21: Gateway for Advancing Science and Mathematics Talent," National Science Foundation, 1999. (Funded, 5 yr, \$2,999,945).
3. Principal Investigator of "Multimedia-focused kinematics questions: an innovative approach to teaching kinematics," National Science Foundation, CCLI – Educational Materials Development, 2000. (Funded, 2 yr, \$74,410).
4. Principal Investigator of "Physics Playground," Greensboro Children's Museum, 2001. (Funded, 1 yr, \$9,000).

WORKSHOPS AND OTHER PRESENTATIONS

1. Titus, A. & Henderson, B. (June, 1994). *Physics Demonstrations: Surprising, Exciting, Practical, Historical, Illustrative*, Physics Courseware Evaluation Project Teacher Institute, North Carolina State University, Raleigh, NC.
2. Titus, A. (March, 1996). *VideoGraph Workshop*. Spring meeting of the North Carolina Section of the American Association of Physics Teachers, North Carolina State University, Raleigh, NC.
3. Titus, A. (September, 1996). *PhysWeb exhibit*. Instructional Technology Expo, North Carolina State University, Raleigh, NC.
4. Martin, L. & Titus, A. (September, 1997). *WWWAssign Shall be Given*. Instructional Technology Expo, North Carolina State University, Raleigh, NC.
5. Titus, A. & Martin, L. (August, 1998). *CGI, Perl, Webserver*. Summer meeting of the American Association of Physics Teachers, University of Nebraska, NE.

6. Christian, W. & Titus, A. (August, 1998). *Developing Web-based Curricula Using Java Physlets*. Summer meeting of the American Association of Physics Teachers, University of Nebraska, NE.
7. Martin, L. & Titus, A. (January, 1999). *Web Servers & CGIs in Perl*. Winter meeting of the American Association of Physics Teachers, Anaheim, CA.
8. Titus, A. (April, 1999). *WebAssign—Delivering, Collecting, and Grading On-line Homework*. Workshop presented for faculty of North Carolina A & T State University, Greensboro, NC.
9. Christian, W., Belloni, M., Titus, A., Martin, L. (July, 2000) *Teaching with Physlets Using Interactive Web-Based Technologies*. Summer meeting of the American Association of Physics Teachers, Guelph, Ontario Canada.
10. Risley, J., Gjertsen, M. & Titus, A. (July, 2000) *Assign Homework with WebAssign*, Summer meeting of the American Association of Physics Teachers, Guelph, Ontario Canada.
11. Titus, A. & Martin, L. (July, 2000) *Perl, Databases and CGI for the Web*. Summer meeting of the American Association of Physics Teachers, Guelph, Ontario Canada.
12. Christian, W., Belloni, M., Titus, A., Martin, L. (January, 2001) *Teaching with Physlets*. Winter meeting of the American Association of Physics Teachers, San Diego, CA.
13. Risley, J., Gjertsen, M., Titus, A. (January, 2001) *Effective Use and Comparison of Web-Based Homework Systems*. Winter meeting of the American Association of Physics Teachers, San Diego, CA.
14. Titus, A. (February, 2001). Making yourself competitive for faculty positions in diverse institutions. Panel presentation given for the Preparing the Professoriate program at North Carolina State University, Raleigh, NC.
15. Titus, A. & Martin, L. (July, 2001) *Perl, Databases and CGI for the Web*. Summer meeting of the American Association of Physics Teachers, Rochester, NY.
16. Christian, W., Belloni, M., Titus, A., Martin, L. (July, 2001) *Physlets: Creating Interactive Curricula Using Java Applets*. Summer meeting of the American Association of Physics Teachers, Rochester, NY.
17. Belloni, M., Christian, W., Dancy, M. (Jan., 2002) *Using Interactive Java-Based Pedagogy in the Classroom*. Winter meeting of the American Association of Physics Teachers, Philadelphia, PA. I presented Physlet animations and curricular material in 2-D kinematics.
18. Belloni, M., Christian, W. (Aug., 2002) *Developing Interactive Java-Based Pedagogy in the Classroom*. Winter meeting of the American Association of Physics Teachers, Philadelphia, PA. I presented Physlet animations and curricular material in 2-D kinematics; participants learned to use Physlets to draw vector components.
19. Titus, A. (January, 2003) *Research Methods to Assess Educational Technology*. Winter meeting of the American Association of Physics Teachers, Austin, TX.
20. Titus, A. (March, 2003) *WebAssign 4.0: Created by teachers for teachers*. Spring meeting of the American Association of Physics Teachers, Coastal Carolina University, SC.
21. Titus, A. (March, 2003) *Using WebAssign*. TALENT (Teaching and Learning Effectively using New Technologies) conference, United States Military Academy, West Point, NY.

ACADEMIC PRESENTATIONS

Invited Talks

1. Titus, A. (January, 1997). *Using the World Wide Web to Administer Multiple Choice Homework Problems to Large-enrollment Classes*. Presented at the winter meeting of the American Association of Physics Teachers, Phoenix, AZ.
2. Titus, A. (March, 1997). *Embracing Today's Technology for Traditional Homework*. Presented at the University of North Carolina at Asheville Department of Physics, Asheville, NC.
3. Titus, A., Christian, W., Beichner, R. (August, 1997). *Integrating Multimedia and Physics Problems*. Presented at the summer meeting of the American Association of Physics Teachers, Denver, CO.
4. Titus, A. (November, 1997). *Using Computers to Teach Physics, The PCEP Teacher Institute, 1993-1995*. Presented at the meeting on The Preparation and Enhancement of Teachers of Mathematics and Science in North Carolina, coconvened by North Carolina State University and the Quality Education for Minorities Network.
5. Titus, A. (1997, November). *Integrating Multimedia and Physics Problems*. Presented at the 64th Annual Southeastern Section Fall Meeting of the American Physical Society.
6. Martin, L. & Titus, A. (January, 1998). *Assessing WWWAssign*. Presented at the winter meeting of the American Association of Physics Teachers, New Orleans, LA.
7. Titus, A. (February, 1998). *Using Technology to Meet the Needs of Learners*. Presented at the North Carolina A & T State University Department of Physics, Greensboro, NC.
22. Titus, A. (August, 1998). *Motivating and Evaluating Students Using Web-based Technology*. Presented at the summer meeting of the American Association of Physics Teachers, University of Nebraska, NE.
23. Titus, A., Christian, W., & Beichner, R. (August, 1998). *Do Multimedia-focused Problems Meet the Needs of Learners or Are They Just Another Way to Torture Students?* Presented at the winter meeting of the American Association of Physics Teachers, , University of Nebraska, NE.
24. Titus, A., (March, 1999). *Using multimedia-focused problems to...* Presented at the Ohio State University Department of Physics, Columbus, OH.
25. Titus, A. (November, 1999). *Going Beyond the End of the Chapter*. Presented at the 66th Annual Southeastern Section Fall Meeting of the American Physical Society.
26. Titus, A. (February, 2000). *Using animation to take the "plug-and-chug" out of physics problems*. Presented at the University of North Carolina at Charlotte Department of Physics, Charlotte, NC.
27. Titus, A. (March, 2000). *Using animation to take the "plug-and-chug" out of physics problems*. Presented at the National Society of Black Physicists Conference, Greensboro, NC.
28. Titus, A. (March, 2000). *Using animation to take the "plug-and-chug" out of physics problems*. Presented at the University of Northern Arizona, Flagstaff, AZ.
29. Titus, A. (May, 2000) *WebAssign -- It's not just a homework system*. Presented at the WebAssign Users Group Meeting at North Carolina State University, Raleigh, NC.
30. Titus, A. (February, 2001) *Tech Tools for Teaching*. Presented for the 2001 McNair Lecture Series, Physics Department, North Carolina A & T State University, Greensboro, NC.
31. Titus, A. (April, 2001) *Tech Tools for Teaching*. Presented to the Southwest Missouri State University Department of Physics, Southwest Missouri State University, Springfield, MO.

32. Titus, A. (April, 2001) *Tech Tools for Teaching*. Presented to the Rutgers University Department of Physics, Rutgers University, New Brunswick, NJ.
33. Belloni, M., Christian, W., Titus, A. (Feb. 2002) *Enhancing Student Learning with Physlet-Based Just-in-Time Teaching*. Presented to the Invitational Conference on K-12 Outreach from University Science Departments. Science House, North Carolina State University, Raleigh, NC.
34. Titus, A (Feb. 2003) *Confessions of a Physics Teacher: Advice to help you in your career*. Presented to the Biology Club at High Point University, High Point, NC.
35. Titus, A. (Feb. 2003) *Teaching at Diverse Institutions*. Presentation given to the Preparing for the Professoriate program at North Carolina State University, Raleigh, NC.

Contributed Talks

1. Titus, A. (March, 1996). *PhysWeb: Serving Multimedia Physics Questions, Exams, and Exercises on a Desktop Macintosh*. Presented at the spring meeting of the North Carolina Section of the American Association of Physics Teachers, Raleigh, NC.
2. Titus, A. (May, 1996). *PhysWeb: Serving Multimedia Physics Questions, Exams, and Exercises on the World Wide Web*. Presented at the joint meeting of the American Association of Physics Teachers and the American Physical Society, Indianapolis, IN.
3. Titus, A. (August, 1996). *Multimedia Physics Exams via the World Wide Web*. Presented at the summer meeting of the American Association of Physics Teachers, College Park, MD.
4. Titus, A. (November, 1996). *Using the World Wide Web to Administer Multiple Choice Homework Problems to Large-enrollment Classes*. Presented at the fall meeting of the North Carolina Section of the American Association of Physics Teachers, Greensboro, NC.
5. Titus, A. (January, 1997). *Influence of Video and Animation on Students' Success at Solving Problems in Introductory Physics*. Presented at the winter meeting of the American Association of Physics Teachers, Phoenix, AZ.
6. Titus, A. (March, 1997). *Multimedia and Problem Solving—Should They be Integrated?* Presented at the spring meeting of the North Carolina Section of the American Association of Physics Teachers, Wilmington, NC.
7. Titus, A. (April, 1997). *Multimedia and Problem Solving—Should They be Integrated?* Presented at the spring meeting of the Chesapeake Section of the American Association of Physics Teachers, Norfolk, VA.
8. Titus, A., & Pushkin, D. (August, 1997). *Using the World Wide Web to Encourage Underrepresented Groups in Physics*. Presented at the summer meeting of the American Association of Physics Teachers, Denver, CO.
9. Christian, W. & Titus, A. (October, 1997). *Using Web Technologies to Distribute Interactive Physics Problems*. Presented at the fall meeting of the North Carolina Section of the American Association of Physics Teachers, Hickory, NC.
10. Titus, A. & Christian, W. (November, 1998). *Developing “real-world” problem solving skills using “unreal” problems*. Presented at the fall meeting of the North Carolina Section of the American Association of Physics Teachers, Asheville, NC.

11. Titus, A. & Christian, W. (April, 1999). *Multimedia-focused Concept Questions*. Presented at the spring meeting of the North Carolina Section of the American Association of Physics Teachers, Winston-Salem, NC.
12. Titus, A. & Christian, W. (July, 1999). *Dynamic Questions"—Using animation in concept questions*. Presented at the summer meeting of the American Association of Physics Teachers, San Antonio, TX.
13. Cobitz, C., & Titus, A. (January, 2001) *Web-Based Tutorial Development Application*. Presented at the winter meeting of the American Association of Physics Teachers, San Diego, CA.
14. Titus, A. and James, F. (October, 2001) *Word Problems and Problems with Words*. Presented at the fall meeting of the North Carolina Section of the American Association of Physics, Cartaret Community College, Morehead City, NC.
15. Titus, A. (June, 2002) *Physlets and WebAssign*. Presented at the 2002 WebAssign Users Group Meeting, June 27 – June 29, North Carolina State University, Raleigh, NC.
16. Titus, A. (August, 2002) *Word Problems and Problems with Words*. Presented at the summer meeting of the American Association of Physics Teachers, Boise, ID.
17. Titus, A. (January, 2003) *Animated Test of Motion*. Presented at the winter meeting of the American Association of Physics Teachers, Austin, TX.
18. Titus, A. (March, 2003) *The ATM: Is it just another test with a TLA?*. Presented at the Spring Meeting of the North Carolina Section of the American Association of Physics Teachers, Greensboro, NC.
19. Titus, A. (November, 2003) *A True Model Rocket*. Presented at the Fall Meeting of the North Carolina Section of the American Association of Physics Teachers, Wrightsville Beach, NC.
20. Titus, A. (March, 2004) *Extend WebAssign to create innovative question types*. Presented at the Spring Meeting of the North Carolina Section of the American Association of Physics Teachers, Raleigh, NC.
21. Titus, A. (June, 2004) *Authoring your own question types*. Presented at the 2004 WebAssign Users Group Meeting, June 28 – June 30, North Carolina State University, Raleigh, NC.

PROFESSIONAL SERVICE

North Carolina Focus Group, Committee on Science, Engineering, and Public Policy, National Academy of Sciences, 1996.

Member, Committee on Instructional Media, American Association of Physics Teachers, 2000-2001.

Physics judge, Hi-IQ Bowl, Greensboro Youth Council, 1998-present.

Vice President, North Carolina Section of the American Association of Physics Teachers, 2001.

President, North Carolina Section of the American Association of Physics Teachers, 2002.

President-elect, North Carolina Section of the American Association of Physics Teachers, 2003.

Moderator of the Matter & Interactions web portal for professors using *Matter & Interactions*, 2004-present.

PROFESSIONAL MEMBERSHIPS

American Physical Society

American Association of Physics Teachers

North Carolina Section of the American Association of Physics Teachers

AWARDS

Best pedagogical paper, Fall meeting of the North Carolina Section of the American Association of Physics Teachers, 2001.